

eSBIRTeS final report

electronic Screening, Brief Intervention and Referral to Treatment for
(poly) drug users in emergency services

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COLOPHON

Authors

David Möbius, Jochen Schrooten, Tom Defillet, Karen Hughes, Katherine Hardcastle, Mark Bellis, Lotte Voorham, Ninette van Hasselt, Katalin Felvinczi, Zsolt Demetrovic, Barbara Mervo, Mariangels Duch, Montse Juan

Collaborators

Henriett Füle, Gábor Zacher, Sándorné Dósa, Csaba Varga, Viktor Soós, David Caldicott, Jan Krul, Bart Rens, Karolina Kindt, Philip Struyve, Koen Titeca, Geert Gunst, Stephanie Bataillie, Karel Decaluwé, Iris Rosier, Jeannet Kramer, Katherina Martin Abello

Layout cover: www.statik.be

Layout eBook: Greet Van Holsbeeck, VAD

Project partners



Vereniging voor Alcohol- en
andere Drugproblemen vzw
(VAD, Belgium)



European Institute of Studies
on Prevention (IREFREA,
Spain)



Centre for Public Health,
Liverpool John Moores University
(JMU, United Kingdom)



Trimbos-Instituut (The
Netherlands)



Eötvös Loránd Universiteit
(ELTE, Hungary)

Participating hospitals



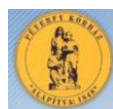
AZ Sint-Maarten
Rooienberg 25
2570 Duffel
Belgium



Kaposi Mór Oktató Kórház
Tallán Gy. u. 20-32.
7400 Kaposvár
Hungary



AZ Groeninge
Loofstraat 43
8500 Kortrijk
Belgium



Péterfy Sándor utcai Kórház
rendelőintézet és Baleseti Központ
Péterfy Sándor utca 8-20
1076 Budapest
Hungary



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General Justice, Freedom and Security)

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1. Introduction

1.1. Backgrounds

In most European Member States the use of recreational drugs is still rising, particularly within the nightclub environment. General population surveys confirm that drug use is associated with certain lifestyles, and targeted studies have found comparatively high levels of drug use in nightlife settings. In many European countries, there is a critical mass of potential polydrug users who regularly gather in large numbers in various nightlife settings. Alcohol is present in almost all polydrug-use repertoires. It is usually the first drug with strong psychoactive and mind-altering effects used by young people. Its widespread availability makes it the elementary drug in substance combinations among young adults, particularly in recreational settings (EMCDDA, 2009).

Data on drug use among young adults in nine countries showed that frequent or heavy alcohol users are, in general, between two and six times more likely to have used cannabis during the previous year than the general population, and between two and nine times more likely to have used cocaine during that period. The use of ecstasy seems to be decreasing again in a number of Western-European countries. Unfortunately, there is an increased use of cocaine, GHB, ketamine and research chemicals like mephedrone. The use of methamphetamine, which is one of the most used and most harmful drugs in the United States, is increasingly finding its way to the recreational settings in some European Countries (EMCDDA, 2009; EMCDDA, 2010).

Youth trends spread through Europe as young people's mobility increases. Drug and alcohol use patterns that used to be confined to specific groups of young people in e.g. London are now 'exported' to other European countries when these young people go on holiday (e.g. Ibiza) or book a weekend return flight to Budapest with a low-cost carrier. As a result, youth trends, including those regarding drug use and drinking cultures, spread throughout Europe, posing new challenges to professionals and services in prevention. Additionally, recreational drug toxicity is a common reason for presentation to the emergency department (ED) (Vitale & Van de Mheen, 2006). Overall, rates of substance use in the ED range from 4% to 47% depending on the definitions and methodology used (Cunningham et al., 2009). In most cases, there is more than one drug involved (West et al., 2008). Given the epidemiology of substance use among ED clients, the delivery of effective interventions in the ED has the potential to have a large public health effect (Cunningham et al., 2009).

1.2. What is SBIRT?

SBIRT is a comprehensive, integrated approach to the delivery of early intervention and treatment services for persons with substance use disorders, as well as those who are at risk of developing them. SBIRT is based on public health principles and procedures. It is designed to reduce the burden of injury, disease and disability associated with the misuse of psychoactive substances, particularly alcohol, illicit drugs, tobacco products, and prescription medications with high abuse potential. An important function of SBIRT is to fill the gap between primary prevention efforts and more intensive treatment for

persons with serious substance use disorders (Babor et al., 2007). SBIRT consists of three major steps:

- *Screening* quickly detects the severity of substance use and identifies the appropriate level of treatment. It is a relatively simple way to maximize the identification of people whose substance use may put them at risk of health problems as well as those who are already experiencing substance related problems. Usually, these clients only find their way to specialized treatment after many years of problematic use. Screening has other benefits as well. It provides ED-staff with information to develop a plan for intervention, and it provides clients with personalized feedback about their substance use risks and problems. This can prompt them to consider changing their substance use behaviour (Lanier & Ko, 2008; Vitale et al., 2006; Pérez et al., 2009).
To be of benefit in EDs, a screening instrument must not only be accurate and reliable in detecting clients with a potential problem: it must also be short and easy to administer so that no undue burden is placed on the client or practice staff when it is applied in the busy practice setting (Lanier & Ko, 2008).
- *Brief intervention* refers to a spectrum of clinical activity focused on the use of a talk-based therapeutic approach to reduce substance use and its associated problems (Kaner et al., 2007). Brief intervention can be used as a stand-alone treatment for those at-risk as well as a vehicle for engaging those in need of more extensive levels of care. The ED provider is in a unique position to provide an individualized BI aimed at prevention or intervention (Burke, O'Sullivan & Vaughan, 2005). BI has been found useful in motivating dependent drinkers to seek specialized treatment and nondependent drinkers to change drinking behaviour and use referral resources (Ballesteros et al., 2004).
- *Referral to treatment* provides those identified as needing more extensive treatment with access to specialized care. This can be done by providing them with a list of potential resources and referral sites for alcohol and drug treatment and counselling. Research suggests that it may be advantageous for ED services to formulate links with appropriate drug treatment services to facilitate assessment and attendance by high-risk clients (Tait & Hulse, 2005).

Thus, a key aspect of SBIRT is the integration and coordination of screening and treatment components into a system of services. This system links specialized treatment programs to a network of early intervention and referral activities that are conducted in medical and social service settings. SBIRT research has shown that large numbers of individuals at risk of developing serious alcohol and/or other drug problems may be identified through primary care screening. Interventions such as SBIRT have been found to:

- Decrease the frequency and severity of drug and alcohol use,
- Reduce traffic accidents under the influence of alcohol or drugs,
- Reduce the risk of trauma, and
- Increase the percentage of clients who enter specialized substance abuse treatment (Babor et al., 2007).

In addition to decreases in substance abuse, screening and brief interventions have also been associated with fewer hospital days and fewer emergency department visits. Cost-

benefit analyses and cost-effectiveness analyses have demonstrated net-cost savings from these interventions (SAMHSA, 2007).

1.3. Electronic SBIRT

In the past decade, growing time constraints in the ED have prompted integration of other communication technologies (telephones, computers) to facilitate ED SBIRT delivery. Evidence supports the efficacy of computer-based motivational interventions for the prevention of alcohol and / or drug use in young adults. Computers have the potential to bridge the gap between the evidence base for brief interventions and the widespread use of these best practices in clinical care. Computerized SBIRT may not only help reduce the load of time and resource challenges, but may also facilitate SBIRT program fidelity and integrity. Using computers, web-based programs and other technology holds considerable promise in other settings and should urgently be evaluated both for primary efficacy and as an aid for translation in the ED. Furthermore, research shows that online treatment programmes are much more acceptable for young adults than other treatment services (Cunningham et al., 2009).

1.4. eSBIRTes?

With this information in mind, the eSBIRTes project focused on identifying and developing effective tools for Screening, Brief Interventions and Referral to Treatment (SBIRT) for young adults presenting at the ED with problems related to (poly) drug use. More specifically, the project aimed at developing an electronic SBIRT (e-SBIRT). Target groups were ED staff (doctors, nurses and other health care professionals working at an ED) and young adult (poly) drug users (clients).

The idea for the eSBIRTes project arose within the network of HNT partners working on the Healthy Nightlife Toolbox (www.hnt-info.eu). The general objective of this EU-funded project was to create and facilitate the implementation of a tool to identify and implement effective interventions, to address the emerging trends of alcohol and drug use, especially ecstasy, cocaine and cannabis, in nightlife settings. When our work within this project progressed, we noticed there were only a few interventions with specific focus on first aid and care for recreational drug users. Moreover, none of these interventions were implemented in Emergency Departments (ED). Knowing that the ED is an important entry portal into the medical care system, it constitutes an important part of the continuum of care and a critical link to both primary and specialised care (Cunningham et al., 2009; Burke, O'Sullivan & Vaughan, 2005).

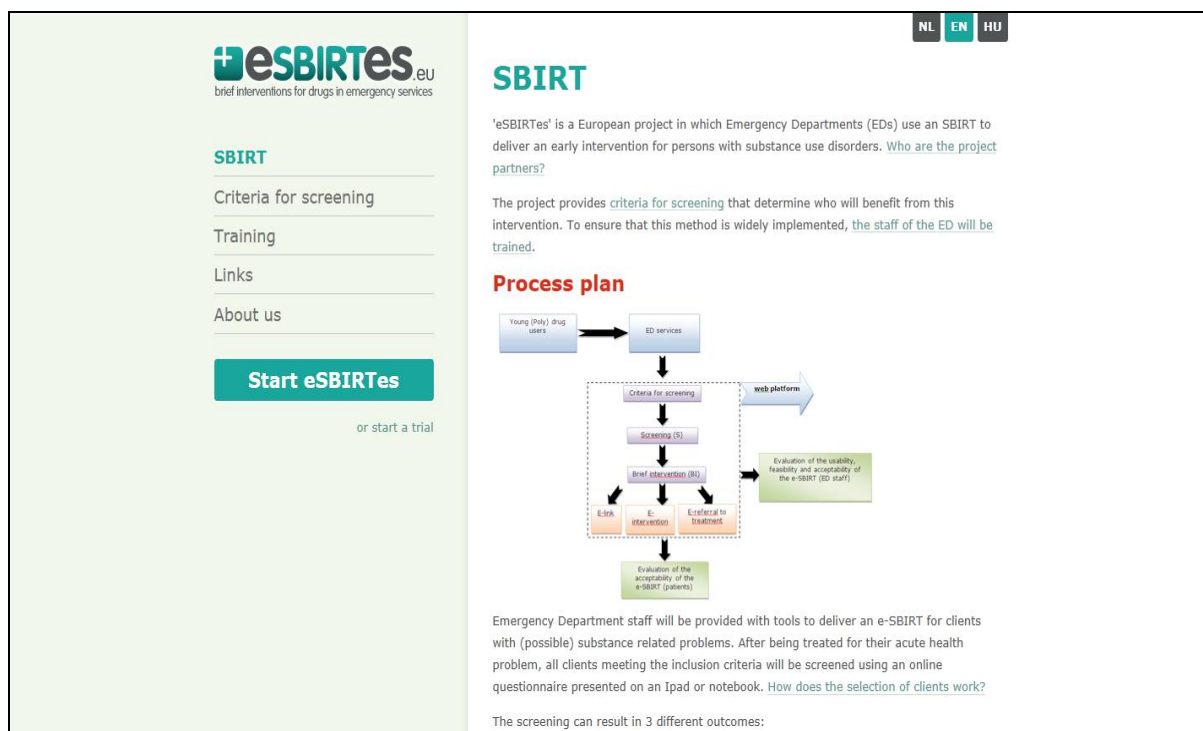
For this project, a literature search was conducted to gather good practices and current evidence base on (online) screening instrument, brief motivational advice, self help modules and referral guides specifically focusing on (poly) drug users in emergency services. Based on the outcomes of this literature review, ED staff were provided with tools to deliver an online screening, a brief intervention and referral to treatment for clients whose substance use may put them at risk of health problems and for clients who are already experiencing substance related problems. After being treated for their acute health problem(s) all clients meeting our inclusion criteria were screened. The screening could result in 3 different outcomes:

- *Low risk:* Clients were provided with a brief advice and links to either local or national drug information websites.
- *Moderate risk:* Clients were referred to the online self-help module (DASH).
- *High risk:* Clients were provided with brief motivational advice to seek professional help and information from the online alcohol and drug-specific referral guide. If clients were not motivated for referral to treatment, they could choose to be directed to the self-help module.

With this project we also tried to respond to the needs of ED staff. An exploratory study (qualitative and quantitative) on the needs of ED staff towards alcohol and drug using clients in the Flemish part of Belgium concluded that most of them want to have more information on how to consort with alcohol en drug using clients. Some staff felt the need for training, others stressed the need for more acceptance of, and more quality of care for, alcohol and drug using clients. They found it is important that staff can identify the target group. Most of the ED staff were prepared to offer an intervention for alcohol and drug using clients if there is sufficient return. All of them stressed the fact that an intervention should not be too time consuming (VAD, 2009).

To integrate the screening tool with the online self-help module and the referral guide, a web platform (<http://www.esbirtes.eu/en>) has been developed. Apart from these tools, the eSBIRTes web platform also contains information pages on the project, the training sessions and additional information on partydrugs. The web platform has been developed in 3 languages: English, Hungarian and Dutch.

The comprehensive IT developments, from front to background databases, made it possible to conduct an entirely electronic based SBIRT at emergency departments and other settings.



1.5. Project objectives

The general objective of the eSBIRTes project was to identify and develop successful, feasible and acceptable e-health tools for staff in emergency departments. These tools should be useful for screening, brief intervention and referral to treatment of young adults presenting with problems related to (poly)drug use. The following specific objectives have been formulated:

- To raise the awareness of ED staff on the importance of an e-SBIRT for (poly) drug users.
- To provide ED staff with tools to deliver an online self-screening, a brief intervention and referral to treatment. These tools can be used in contact with clients whose substance use may put them at risk of health problems and for clients who are already experiencing substance related problems (e-SBIRT).
- To raise the ability of ED staff to identify clients who are eligible for screening.
- To provide clients with personalized feedback about their substance use, risks and problems which can prompt them to consider changing their substance use behavior.
- To implement the e-SBIRT for (poly) drug users in at least two EDs in three partner countries.
- To evaluate the e-SBIRT for (poly) drug users in at least two EDs in three partner countries.
- To inform ED staff and other relevant stakeholders all over Europe about the eSBIRTes web platform.

2. Literature review

A systematic literature review was carried out to gather good practices and current evidence base on (online) screening instrument, brief motivational advice, self help modules and referral guides specifically focussing on (poly) drug users in emergency services.

2.1. Objectives

The objectives of the eSBIRTes literature review were:

1. To determine which screening tool for substance use has the best evidence for reliability/validity/acceptability and would be feasible to use within emergency departments.
2. To establish the evidence base for the use of online or computer based programmes for managing recreational substance use, including:
 - a. Whether computer based interventions work specifically in emergency department settings;
 - b. Any barriers for their implementation (e.g. time restraints);
 - c. Health care professionals' views about these types of interventions;
 - d. Users' views about these types of interventions.

A lack of information for objective two meant that additional objectives were set to gain enough information to inform the future pilot study. These were:

3. To establish whether SBIRT (non electronic) interventions are effective in primary care and in emergency departments.
4. To establish whether there are any barriers to implement SBIRT within emergency department settings.

2.2. Methods

A systematic search of academic databases (Medline, ERIC, PsychINFO, Cochrane, ASSIA, Social Sciences Citation Index, CINHALL and IBSS) was conducted (see search strategy in Appendix), resulting in 3,413 potentially relevant articles. Two different strategies were used to answer the two objectives.

For the first objective, the searches identified a systematic review of screening instruments for detecting illicit drug use in general hospital wards (Mdege and Lang, 2011). This comprehensive review detailed screening tools for the detection of substance use within adult patients not known to have a substance use problem, that were short enough for use within a hospital setting (take less than 10 minutes to complete) and that did not require any specific training to administer, score or interpret results. Although the article did not focus on the use of screening tools specifically within emergency departments, it was deemed suitably relevant and up-to-date (published in 2011) to be able to answer objective one without conducting a separate analysis of results.

For the second objective, no systematic reviews were found that could answer the questions posed. Therefore we conducted our own systematic review using the 3,413

articles identified through the search strategy. Titles and abstracts of the identified studies were reviewed initially for potential relevance in answering the research questions, resulting in a total of 179 articles. A further 17 potentially relevant articles were found through hand searching reference lists, resulting in a total of 196 articles. These articles were reviewed using a set of inclusion criteria (see Box 1). The methodology of the resulting papers (38 in total) were then further reviewed and papers excluded if: they targeted specific groups not relevant to the target population (e.g. pregnant or postpartum women, problematic substance users), they included parental involvement (e.g. parental monitoring), participation was not voluntary, or there was no control group for comparison purposes. The resulting 16 papers were included for review. A flow chart of the search process is provided in the Appendix on page 32.

Box 1: Inclusion criteria

- Evaluates an computer-based intervention for preventing/reducing/managing substance use (may also include other objectives)
- Outcomes include at least one quantitative measure relating to: drug behaviours; drug-related knowledge, drug-related attitudes, drug-related beliefs, drug-related self efficacy or drug-related intentions, OR include opinions/preferences on the computer-based intervention (within last 5 years only; users or providers)
- Study reports data detailed enough to establish changes in outcome measures.

For the third and fourth objectives, a simple search was conducted within Medline for SBIRT interventions (within any setting). This was supplemented by lists of references for SBIRT related interventions that had already been identified by VAD (Vereniging voor Alcohol- en andere Drugproblemen vzw).

2.3. Screening tools

2.3.1. Which screening tool for substance use has the best evidence for reliability / validity / acceptability and would be feasible to use within emergency departments?

A systematic review of screening instruments for detecting illicit drug use in general hospital wards (Mdege and Lang, 2011) was identified through the systematic search. The article summarised the validity, reliability, sensitivity, specificity, predictive values, acceptability and feasibility of screening tools for detecting illicit drug use/abuse. Thirteen screening tools were selected for review out of a possible 708 instruments identified through the Alcohol and Drug Abuse Institute Library. Screening tools were not included in the review if they: were for use with individuals known to have a problem with drug use prior to screening; were for use with adolescents only; were for use in the detection of alcohol abuse or other addictive behaviours only; focused specifically on just one or two drugs; or took more than 10 minutes to complete. The remaining tools were:

- **ASSIST**: Alcohol, Smoking and Substance Involvement Screening Test (IA)
- **CAGE-AID**: Cut Down, Annoyed, Guilty, Eye-Opener – Adapted to Include Drugs (SA)
- **DAST**: Drug Abuse Screening Test (SA)

- **DHQ/PDHQ:** Drug History Questionnaire or Psychoactive Drug History Questionnaire (SA)
- **DUDIT:** Drug Use Disorders Identification Test (SA)
- **DUS:** Drug Use Screening (IA)
- **NMASSIST:** NIDA-Modified Alcohol, Smoking and Substance Involvement Screening Test (SA/IA)
- **SMASST-AID:** Short Michigan Alcoholism Screening Test Adapted to Include Drugs (SA)
- **SIP-AD:** Short Inventory of Problems-Alcohol and Drugs (SA)
- **SDS:** Severity of Dependence Scale (SA)
- **SSI-SA:** Simple Screening Instrument for Substance Abuse (SA/IA)
- **TICS:** Two Item Conjoint Screen for Alcohol and other Drug Problems (SA)
- **UNCOPE:** Use, Neglect, Cut-down, Objection, Preoccupied, Emotional discomfort (IA)

(SA = self administered; IA = interviewer administered; SA/IA = self or interviewer administered)

Table 1: Evidence for validity, reliability, sensitivity, specificity, predictive value and acceptability of 13 screening tools

	Validity		Reliability		Sensitivity		Specificity		Predictive value		Acceptability, feasibility and perceived relevance	
ASSIST Australia, Brazil, India Ireland, Israel, Palestinian Territories, Puerto Rico, Thailand, UK, USA, Zimbabwe	✓	Construct validity (r= 0.40-0.81). Concurrent validity (r=0.59-0.89) Discriminative validity reported	✓	Internal consistency (α>=0.77) Test-retest reliability (Kappa=0.58-0.90)	✓	54%-97%	✓	50%-96%	x		✓	Consistent with patients' expectations for health interview; easy to answer (across all countries studied and within various medical settings)
CAGE-AID USA	✓	Concurrent and divergent validity reported	✓	Internal consistency (α=0.92)	✓	70%-92%	✓	48%-90%	✓	+ve 12%-36% -ve at least 98%	x	
DAST USA Canada India	x		✓	DAST-28, DAST-20 and DAST-10: Internal consistency (α>=0.86) Test-retest reliability (Kappa=0.71-0.85)	✓	DAST-28: >=82% DAST-20: 55%-89% DAST-10: 65%-85%	✓	DAST-28: 71%-93% DAST-20: 68%-86% DAST-10: 68%-98%	✓	DAST-28: +ve 23%-96% -ve 74%-98% DAST-20: +ve 23%-96% -ve 74%-98% DAST-10: +ve 35%-73% -ve 93%-99%	x	
DHQ/PDHQ	x		x		x		x		x		x	
DUDIT	x		x		x		x		x		x	
DUS	x		x		x		x		x		x	
NMASSIST	x		x		x		x		x		x	
SMAST-AID USA	x		x		✓	40%-51%	✓	92%-95%	x		x	
SIP-AD USA	✓	Concurrent validity (r=0.35 to 0.59) Discriminative and convergent validity reported	✓	SIP-AD 10 and SIP-AD 15: Internal consistency (α>=0.93) Test-retest reliability reported	x		x		x		x	
SDS	x		x		x		x		x		x	
SSI-SA	x		x		x		x		x		x	
TICS USA	✓	Concurrent and construct validity reported	x		✓	78%-81%	✓	76%-81%	✓	+ve 59% -ve 93%	✓	76%-84% of participants very comfortable with TICS interview
UNCOPE USA	x		✓	Internal consistency (α>=0.85)	✓	85-88%	✓	83%	✓	+ve 85% -ve 83%	x	

Source: Mdege ND and Lang J. Screening instruments for detecting illicit drug use/abuse that could be useful in general hospital wards: a systematic review. *Addictive Behaviours*, 2011;1111-1119 DHQ/PDHQ

2.3.2. Summary of findings from Mdege and Lang (2011)

A summary of the findings and the countries in which tools have been scientifically tested can be found in Table 1. Geographically, the ASSIST tool has been tested most widely, with studies implemented in eleven different countries including the UK and Ireland. Only four screening tools demonstrated evidence of validity (ASSIST, CAGE-AID, SIP-AD and TICS) and five demonstrated evidence of internal consistency (ASSIST, CAGE-AID, DAST, SIP-AD and UNCOPE). Two tools reported statistics for test-retest reliability (ASSIST and DAST), although the statistic for the ASSIST tool suggested a need for improvement. Six tools assessed levels of sensitivity and specificity (ASSIST, CAGE-AID, DAST, SMAST-AID, TICS and UNCOPE). Authors suggested that sensitivity and specificity scores of the ASSIST, CAGE-AID, DAST-20 and SMAST generally indicated a need for improvement, while those for DAST-28, DAST-10, TICS and UNCOPE were optimal (~80%). Only four tools had been tested for predictive value (CAGE-AID, DAST, TICS and UNCOPE). Authors suggested that the negative predictive values were generally good to excellent for all four tools, while positive predictive values were best for DAST-20 and UNCOPE. Levels of acceptability had only been evaluated for two tools (ASSIST and TICS). Here, acceptability had only been assessed with patients, not health care professionals. However, both tools were reported to be highly accepted by participants.

Definitions

Construct validity: a tool accurately measures a theoretical, non-observable construct or trait. This is usually tested by correlating responses to different test items, with other tests or with real-life measures.

Concurrent validity: measures the degree to which a construct correlates with other measures of the same construct.

Convergent validity: measures the degree to which a construct correlates with other measures that it is theoretically predicted to correlate with.

Discriminative validity: measures the degree to which a construct does not correlate with other measures that it should theoretically not be correlated with.

Internal consistency: measures whether several items that measure the same construct produce similar scores. A statistic of $\alpha \geq 0.70$ indicates acceptable internal consistency

Test-retest reliability: measures how well a test produces similar scores if the same participants are tested twice. A score of 1 indicates perfect agreement. Fair agreement is sometimes regarded as 0.2 or above.

Sensitivity: measures the proportion of positive subjects who test positive with the screening test.

Specificity: measures the proportion of negative subjects who test negative with the screening test.

Positive predictive value: measures the proportion of individuals who test positive with the screening tool who are actually positive.

Negative predictive value: measures the proportion of individuals who test negative with the screening tool who are actually negative.

2.3.3. Screening tools: conclusions

Mdege and Lang (2011) conclude that there is a lack of evidence of extensive evaluation of illicit drug use screening instruments in adult patients not known to have a substance abuse problem in hospital settings. Furthermore, they note that clinicians or researchers searching for a simple, reliable, general screening tool for current drug use do not have enough comparable evidence to choose between the available measures. Despite the clear need for greater and more detailed evaluation of these measures in hospital settings, it is evident that certain tools have been tested more widely and in more detail than others and would be more applicable to the eSBIRTes project. Of the thirteen tools chosen to study, only seven had evidence of their ability to detect illicit drug use (e.g. reliability, validity, specificity etc) in adult patients not known to have a substance abuse problem (some tools only demonstrated reliability and validity in populations known to have a substance abuse problem).

Of these seven, there was much variation in the types of tests conducted and the geographical areas in which they had been evaluated. While all seven tools could demonstrate some degree of validity, reliability or sensitivity/specificity, only two (ASSIST and DAST) had been tested in more than one country (outside of the USA), with only ASSIST tested in countries within Europe (UK and Ireland). From the available evidence therefore it would appear that either the ASSIST or DAST would be the most suitable screening tools to use. Both ASSIST and DAST can demonstrate high internal consistency and test-retest reliability. The DAST tool has evidence of higher sensitivity and specificity than ASSIST, and has reported predictive values (not reported for ASSIST). However, DAST focuses on dependence and is not able to distinguish between active and inactive use or to distinguish between abstainers/low risk substance abuse and dependent users. The ASSIST tool shows different advantages: it has high construct, concurrent and discriminative validity (not evaluated for DAST); evidence of high acceptability and ease of use among individuals (not evaluated for DAST); and importantly, it has been tested in a much wider variety of countries, including those within Europe. In addition, ASSIST is able to distinguish between three risk groups: low, medium and high risk users.

2.4. Online or computer based programmes for managing recreational substance use

2.4.1. What evidence exists for the effectiveness of online or computer based self help modules for managing recreational substance use?

Sixteen studies were identified as relevant for the review (see table 2 for study characteristics and descriptions of interventions). Two papers (Newton et al, 2009 and Newton et al, 2010) evaluated the same intervention at different points in time, resulting in 15 separate intervention evaluations. From the 15 interventions, eleven explored drug related behavioural outcomes, and eleven included secondary outcomes, such as knowledge of drugs, attitudes or beliefs towards drugs, self efficacy in avoiding drugs and intentions to use drugs/refuse drugs in the future. Nine papers included both drug behavioural and secondary outcomes. Although drug behavioural outcomes were the primary interest in our analyses, secondary outcomes were also considered to provide a wider understanding of intervention effectiveness.

The fifteen interventions covered a wide range of settings (school, college, community, workplace, outpatient clinic, and internet), and target groups and ages (school children,

college, people seeking treatment for cannabis use, people using medications with abuse potential, HIV affected outpatients and individuals using social networking sites). Furthermore, while all interventions were computer based or online, the type of intervention and content varied. While some focused mainly on an education curriculum, the majority included therapy-based components (e.g. cognitive behavioural therapy, motivational interviewing) that aimed to develop skills (e.g. problem solving or coping). While ten of the interventions were solely computer based, the remaining five included input from a professional (either teacher or health professional such as therapist). Variation across the different interventions presented a challenge for developing an overall picture of programme effectiveness. This was compounded by the variation in comparison groups and outcome measures used within the evaluations. For instance, while six studies compared participants completing an intervention to those not offered an intervention, two studies compared intervention participants to individuals undergoing usual care (which may have included aspects of drug prevention/management). Furthermore, four studies compared intervention participants to those participating in alternative drug prevention/management programmes. The remaining three studies included more than one comparison group (no intervention and alternative interventions). For these papers, results were only analysed for intervention vs. control groups since this provided a better indication of programme effectiveness. For papers with drug-related outcomes, the measurements varied, including: whether there was any drug use (yes/no), the number of days of drug use, the percentage of days drugs had been used, a frequency scale, or the number of occasions of use per day. Time frames of post tests also varied, ranging from immediately after the intervention to up to 12 months post-intervention.

2.4.2. Effectiveness of interventions compared to no intervention

Drug behaviour outcomes

Five studies explored the effects of computer-based or online interventions in comparison to no intervention (table 3). Three studies reported that the intervention had no effects: on problematic prescription drug use (immediately following intervention; Deitz et al, 2011); on drug use (immediately following intervention; Williams et al, 2005); or on marijuana use (at 3 months and 6 months post intervention, Lee, 2010). A fourth paper (Schwinn, 2010) reported no effects on either marijuana use or polydrug use immediately following the intervention, but significant positive effects at a six month follow up. The last paper (Tossman, 2011) reported significant positive effects at a three month follow-up. Here, participants reported a significant reduction in the number of days of cannabis use in the last 30 days compared to a control group. The two interventions that reported positive effects were briefly compared to those reporting no effects to explore any differences in the intervention types. While the two effective interventions were both based in internet settings (i.e. targeting users of specific websites), it is not clear how this could have affected drug-related outcomes. However, Tossman (2011) was the only study to target users *expressing the wish to reduce or cease cannabis use*; thus those that may be more motivated to reduce use than more general groups (e.g. school children or college marijuana users). This may well have contributed to the positive effects reported within this intervention. Since programme content varied considerably between studies, no other factors could be identified that may have contributed to effectiveness. Overall therefore, results from the five studies indicate that there is no clear effect of computer-based or online interventions in reducing drug use compared to a control group.

Secondary outcomes

Seven studies explored the effects of computer-based or online interventions on secondary outcomes in comparison to no intervention (table 3). Overall, results were mixed, showing no clear effects. Four studies measured changes on drug-related knowledge. While some positive results were reported immediately following the intervention in some instances, no significant differences were found between intervention and control groups for the majority of knowledge-based outcomes. Only one study measured effects on knowledge over longer follow up periods (Epstein 2007). However, here, no significant differences were reported between groups at either one month or four months following intervention. Three studies measured changes in self efficacy. Whilst two reported greater positive changes in self efficacy in the intervention groups, the third study reported mixed findings. Here, while intervention participants had greater confidence in refusing drugs from strangers, confidence in refusing drugs from friends did not differ between groups. Three studies measured changes in drug-related attitudes, with no significant differences found between intervention and control groups for the majority of outcomes. Lastly, of the two studies that measured changes in intentions to use/not use drugs in the future, one reported no group differences immediately following intervention and the other reported mixed findings.

2.4.3. Effectiveness of interventions compared to usual care

Drug-related outcomes

Two studies measured the effectiveness of interventions compared to usual care or health classes (table 4). Gilbert et al (2008) targeted HIV affected outpatients using a computer based intervention that displayed clips delivering risk reduction messages and delivered a tailored cueing sheet for medical providers to help with future consultations. The evaluation reported mixed results, making conclusions difficult to derive. The intervention group was significantly less likely than the usual care group to report any ongoing drug use immediately after the intervention and at a three month follow up. However, there no significant differences found over the same time periods for the total days of drug use reported in the past month (both reported slight decreases). Mixed results were also found for Newton (2009, 2010) who used a very different target group: year 8 school children (~13 years of age). Children were presented with a computer-based alcohol and cannabis prevention programme that incorporated teacher-delivered activities, and measured their level of cannabis use in the past three months. No significant differences in cannabis use were reported between intervention and comparison groups either immediately following the intervention or at a twelve month follow up. However, a greater reduction in the frequency of cannabis use was reported at a six month follow up for the intervention group, suggesting that the programme has potential for short term (but not longer term) effect. Given the very different nature of these two interventions, it is not possible to generate overall conclusions. While both programmes demonstrated potential for some positive effects, greater research using more consistent outcomes would be needed to be able to determine effectiveness compared to usual care.

Secondary outcomes

Only one study measured changes in secondary outcomes (Newton [2009,2010; table 3], see paragraph above). This study explored the effects of a school-based intervention on knowledge of cannabis and attitudes towards cannabis. Compared to usual health classes, those in the intervention group had a significantly greater increase in cannabis knowledge

at a 12 month follow up. However, no changes were reported in participants' positive attitudes towards cannabis (both groups showed slightly higher scores at 12 month follow up).

2.4.4. Effectiveness of interventions compared to alternative programme

Drug-related outcomes

Three studies measured the effectiveness of interventions compared to alternative programmes (table 4). Budney (2011) targeted members of the community seeking treatment for cannabis use and compared computer delivered therapy sessions with therapist delivered sessions. They reported no significant differences between the two groups, with both groups showing a significant reduction in cannabis use over a 12 week period (immediately following the intervention). Marsch (2006) targeted a much younger age group: school children in 7th grade (around 12 years of age). They compared an interactive computer based drug prevention programme with an alternative programme delivered by teachers. Findings from this study again suggested no significant changes between intervention and comparison groups in terms of frequency of marijuana use immediately following the intervention. However unlike Budney (2011), there appeared to be little change in the frequency of marijuana use over time for either group (although statistical analyses of changes were not reported for separate groups). Finally, Kay-Lambkin (2009) targeted members of the community, or those referred from treatment, with co-morbid depression and substance misuse. They compared three separate interventions: brief intervention for depression and substance use only; brief intervention followed by computer-delivered therapy; and brief intervention followed by psychologist-delivered therapy. Over a six month period, although cannabis use reduced for all three intervention groups, reductions were significantly higher for the computer-delivered and therapist-delivered interventions than the brief intervention alone. Furthermore, computer-delivered therapy delivered the largest treatment effects. Given the different comparison groups, content of interventions and target groups, it is again difficult to provide any overall statements of effectiveness. While one study appeared to report no changes in drug use over time (Marsch, 2006), two studies reported significant reductions in drug use following the intervention (Budney, 2011 and Kay-Lambkin, 2009). However the lack of control group (i.e. no intervention) within these evaluations means that it is difficult to draw conclusions. Findings are dependent to some extent on the effectiveness of the comparison interventions. Despite this, in at least some cases, computer-based interventions can be just as effective as professional delivered interventions in terms of affecting drug-related outcomes.

Secondary outcomes

Three studies explored the effects of interventions on secondary outcomes compared to alternative programmes (table 3). Only one study measured changes in either drug-related knowledge or attitudes towards drug use immediately following intervention (Marsch, 2006). Here, greater increases in knowledge were found compared to an alternative drug prevention programme. Additionally, although no differences in groups were found for attitudes, both groups reported an apparent reduction (not reported statistically) in negative attitudes towards marijuana. One study explored intervention effects on self efficacy immediately after intervention (Budney, 2011) and reported no differences between the intervention group and therapist delivered therapy (neither group displayed significant increases). One study measured changes in drug-related beliefs

among females only (Schinke, 2005), reporting a greater reduction in the belief that *drugs are a good way to handle stress* for the intervention group compared to a conventional drug abuse programme. Finally, two studies measured the effects of intervention on intentions to use or refuse drugs in the future. Marsch (2006) reported mixed results; while there were no differences between groups on intentions to smoke marijuana in the next year (no apparent change for either group), the percentage of participants intending to refuse drugs if offered increased significantly more for the intervention group. Similarly mixed results were found by Schinke (2005). This paper reported a significantly greater decrease in the intention to use marijuana among girls for the intervention group, but no significant differences between intervention and comparison groups for intention to use illegal drugs in the next year, or to use drugs if their best friend offered them (both groups showed apparent decreases but this was not tested statistically). Overall, results cannot allow us to determine the effectiveness of computer-based or online interventions in changing secondary outcomes compared to alternative interventions.

2.4.5. Summary of effectiveness

Given the diversity of interventions, target groups, outcome measures and comparison groups contained within the 16 identified papers, it is not possible to draw any overall conclusions about the effectiveness of computer-based or online interventions, either in reducing substance use or in affecting secondary outcomes such as drug-related knowledge, attitudes, beliefs, self efficacy or intentions. Although positive results have been reported both for drug behaviours and secondary outcomes in some instances, there are no differences between groups for a large proportion of included outcome measures.

2.4.6. Do interventions work specifically in emergency department settings?

It is not possible to answer this question since none of the studies included in the review were based in emergency departments. Three studies were based in hospital Deitz (2011) or clinic settings (Gilbert, 2008 and Rickert, 1993). However, Deitz (2011) targeted employees of the hospital rather than patients and this study is not therefore relevant to this question. Gilbert (2008) targeted HIV positive patients in a clinic, reporting mixed results in terms of drug use. Lastly, Rickert (1993) targeted adolescents attending a general medical clinic and reported positive effects of the intervention on drug-related knowledge (compared to usual care).

2.4.7. What barriers exist for their implementation? (e.g. time restraints)

It is not possible to answer this question since none of the included sixteen studies explored the process of implementation or problems experienced by professional staff.

2.4.8. What do professionals think about these kinds of interventions?

Three studies explored professional opinions of the interventions (Epstein 2007; Marsch 2006; Newton 2009&2010; table 5). All three of these interventions were school-based, and thus opinions were sought from teachers only. While none of the three studies sought opinions specifically about the computer-based delivery, all three interventions received

positive feedback regarding content and use. Teachers in the Epstein (2007) study reported that the interventions fitted well within their curriculum and that students benefited from participation. Those taking part in the intervention described in Marsch (2006) reported that the programme was highly useful in providing drug abuse prevention in the classroom. Finally, teachers in the Newton (2009, 2010) study found the course to be an acceptable means of school drug education. Here, three quarters of teachers indicated that they would use the course in the future and recommend it to others, while 72% endorsed the programme as better than other educational programmes.

2.4.9. What do users think about these kinds of interventions?

Six studies (within the last five years) explored user opinions of the interventions (Budney, 2011; Deitz, 2011; Epstein, 2007; Gilbert, 2008; Marsch, 2006; Newton, 2009&2010). On the whole, users from all six studies reported positive feedback about their participation (see table 5 for a full description of opinions). However, as with the professional opinions discussed above, opinions were focused more on the content of the interventions than on the computer-based element. Despite this, five studies provided user views that could be related to the use of a computer. For instance, participants in the Budney (2011) study reported that they “liked using the computer” and that the programme “compared to previous education/training sessions”; these statements received mean ratings of 8.8 and 8.2 respectively out of a possible 10. Almost all (97%) of those participating in the intervention described by Gilbert (2008) “liked” the computer programme. However, a very small proportion (4%) wanted more privacy when using the computer. Participants in the Marsch (2006) study reported that the computer programme compared to previous drug education (mean ratings for this statement were around 75 out of a possible 100). Students taking part in the intervention by Newton (2009, 2010) found the programme to be an acceptable means of school drug education. Lastly, Epstein (2007) reports that students taking part in an Internet intervention rated the intervention significantly lower in terms of satisfaction than students in other conditions (delivered by CD-ROM, workbook or video). However authors acknowledge that regardless of intervention condition, students enjoyed and liked the programmes. Overall therefore, it appears that where opinions have been explored, users report favorable views both of course content and acceptability of computer delivery.

2.4.10. Online or computer based programmes for managing recreational substance use: conclusions

It has not been possible to draw any overall conclusions about the effectiveness of computer-based or online programmes for reducing, managing or preventing drug use. Identified interventions differ substantially in terms of intervention type and content, target groups, outcome measures and comparison groups. There is a clear need for further research in this area to be able to draw definite conclusions. In particular, the evidence base would benefit from developing more consistent outcome measures and from using a control group that received no intervention (as opposed to an alternative drug prevention programme). Since no studies were conducted in emergency departments, it is not known whether interventions can be effective in these settings. Similarly, since none of the included studies explored barriers to intervention implementation, it is not known whether there are factors that should be taken into

account when setting up computer based interventions. Although a number of studies measured professionals' or users' opinions of interventions, the main focus of these views was on the content of the programme, not the computer based delivery per se. However, in general, interventions received positive feedback, suggesting that computer-based programmes are acceptable to both professionals and users.

Table 2: Study characteristics

MET = motivational enhancement therapy; CBT = cognitive behavioural therapy; CM = contingency management; MI = motivational interviewing; NR = not reported; CT = controlled trial; RCT = randomised controlled trial; I = intervention; C=control; N= total number of participants.

Author year and country	Setting and target sample	Inclusion criteria	Study design	Intervention	Control or comparison	N	% male	Mean age (range)	Retention
Budney (2011) USA	Community; Members of the local community seeking treatment for cannabis use disorder.	Aged 18+; DSM-IV diagnosis of cannabis abuse/dependence, report cannabis use on ≥ 50 days in past 90 days; no dependence on alcohol/other drugs; no participation in treatment for substance use; no psychological distress.	CT	Computer delivered nine session individual therapy including MET, CBT and CM. This included feedback report, goal setting exercises, and skills training (e.g. problem solving, coping, managing thoughts and drug refusal). Included three 15-30 min sessions with therapist. <i>Duration: 12 weeks.</i>	Therapist delivered nine session individual therapy involving the same components as the computer intervention. <i>Duration: 12 weeks.</i>	38	47%	32.9	61%
Deitz (2011) USA	Workplace; female employees of a hospital currently using medications with abuse potential	Access to a computer with Internet.	CT	Web-based interactive program consisting of: medication facts; safe administration of prescription medicines; avoidance of drug abuse and alternatives to medications. Contained self assessments on current or anticipated drug use. <i>Duration: 4 weeks.</i>	Wait-list control group.	362	0%	44 (21-75)	95%
Duncan (2000) USA	School; public school children	NR	RCT	Computer-based programme using video-vignette scripts to develop skills such as resisting peer pressure, refusing drugs and communicating and respecting personal limits. Delivered in groups on large monitor.	No intervention	74	61%	15.2	12%
Epstein (2007) USA	School; third and fourth grade students enrolled in a rural school district.	NR	CT	Seven lesson substance abuse education curriculum with lessons on drugs, the brain, drugs and brain, genetics, risk and protective factors, consequences of substance abuse and treatment for substance abuse. Delivered via 1) CD-ROM or 2) a website. <i>Duration: 7 months.</i>	1) No intervention 2) Same curriculum delivered via DVD 3) Same curriculum delivered by workbook. <i>Duration: 7 months</i>	274	51%	NR (8-10)	88%
Gilbert (2008)	Outpatient clinics; HIV affected	Aged 18+; HIV+ for 3 months or longer;	RCT	Computer programme showing Video Doctor clips that delivered interactive	Usual care	476	79%	(I) 43.9 (C) 44.3	82-83%

Author year and country	Setting and target sample	Inclusion criteria	Study design	Intervention	Control or comparison	N	% male	Mean age (range)	Retention
USA	outpatients			risk reduction messages and educational worksheets. The programme produced a cueing sheet for medical providers suggesting counseling statements. Booster video clip session at 3 months. <i>Duration: Brief session lasting 24 minutes, plus additional booster session at 3 months.</i>					
Kay-Lambkin (2009) Australia	Community; members of the community or those referred from alcohol treatment, mental health or primary health care settings with co-morbid depression and substance misuse.	Score of 17+ on the Beck Depression Inventory II (BDI-II 20); lifetime diagnosis of major depressive disorder, current problematic alcohol disorder or weekly use of cannabis; absence of brain injury or cognitive impairment; aged 16+; ability to understand English.	RCT	Brief intervention for depression and substance misuse, nine sessions of MI and CBT delivered by computer, and brief 10-15 minute weekly psychologist input. <i>Duration: 3 months</i>	1) Brief intervention plus no further treatment. 2) Brief intervention plus nine sessions of MI and CBT delivered by psychologist. <i>Duration: 3 months</i>	97	46%	35.4 (18-61)	69%
Lee (2010) USA	College; first year marijuana using students at a US university.	Aged between 17 and 19; use of any marijuana in the last 3 months.	RCT	Personalised computerised feedback intervention based on MI. This included feedback on marijuana use, perceived and actual norms, perceived pros and cons of using marijuana, and skills training tips for avoiding/changing use of marijuana. <i>Duration: not reported</i>	No intervention	341	45%	18.0	92% at 6 month follow up
Marsch (2006) USA	School; 7 th grade students in four public schools across the state of Vermont.	NR	CT	Interactive computer based drug prevention programme (15 sessions) promoting protective factors, training in drug refusal skills, social competency and attitudes against drug use. <i>Duration: academic year</i>	Alternative drug abuse prevention training. 15 sessions delivered by teachers. <i>Duration: academic year.</i>	272	55%	12.5 intervention; 12.2 control	NR
Newton (2009) (2010)	School; Year 8 students from 10 independent schools	NR	RCT	Alcohol and cannabis prevention programme; 12 lessons including reasons for using cannabis and its	Usual health classes, most of which included	764	60%	13.1	79% at 12 month follow up.

Author year and country	Setting and target sample	Inclusion criteria	Study design	Intervention	Control or comparison	N	% male	Mean age (range)	Retention
<i>Australia</i>	across Sydney.			consequences, and drug refusal skills. Lessons comprised a 15-20 minute internet component followed by a teacher-delivered activity. <i>Duration: 6 months</i>	syllabus-based drug education. <i>Duration: academic year</i>				
Rickert (1993) <i>USA</i>	Medical clinic; adolescents (13-18) attending a general medical clinic	NR	RCT	Computer assisted education programme including general information about drugs and multiple choice questions. <i>Duration: one session 15-20 minutes</i>	1) No intervention 2) interactive discussion with a physician including information on effects of marijuana <i>Duration: One session 15-20 minutes</i>	89	40%	15.5 (13-18)	100% but no follow up time.
Schinke (2004) <i>USA</i>	Community; adolescents residing in households with incomes below the Federal poverty line	NR	RCT	Computer based drug prevention programme incorporating anger control elements.	1) No intervention 2) Drug prevention programme with same content delivered by community site staff	189	~50 %	9.6 (7-15)	NR
Schinke (2005) <i>USA</i>	School; 7 th grade girls in New York City middle schools	NR	RCT	Computer based programme emphasising stress, coping strategies and stress reducing techniques. Included module on stress and drugs. <i>Duration: one session 20-30 minutes</i>	Conventional drug abuse program delivered by teachers, including didactic information and class discussion. <i>Duration: one session 40 minutes</i>	91	0%	NR (12-13)	NR
Schwinn (2010) <i>USA & Canada</i>	Internet; 7 th , 8 th and 9 th grade girls accessing the website kiwibox.com	NR	RCT	12 internet based sessions covering personal and social skills and skills specific to dealing with drug use opportunities, e.g. goal setting, decision making, coping, self esteem, peer pressure and drug facts. <i>Duration: 6 weeks</i>	No intervention	236	0%	14	91% at 6 month follow up
Tossman	Internet; QTS (Quit	NR	RCT	Online counseling programme	Wait list control	129	NR	24.7	48%

Author year and country	Setting and target sample	Inclusion criteria	Study design	Intervention	Control or comparison	N	% male	Mean age (range)	Retention
(2011) <i>Germany</i>	the Shit) website users expressing the wish to reduce or cease cannabis use			including 50 minute online chat with psychotherapist, online cannabis use diary and detailed personal feedback by counselor each week <i>Duration: 50 days</i>	group	2		(those completing follow up)	
Williams (2005) <i>USA</i>	School ; 6 th and 7 th grade students from public schools in New York	NR	RCT	10 session computer based substance abuse prevention programme using interactive audio and video content. Included knowledge and skill based components for resisting social influences and reducing motivation to use substances. <i>Duration: 6 weeks</i>	No intervention (wait list control group)	123	50%	NR (12-13)	53%

Table 3: observed effects on drug behaviours

✓ = Positive effects compared to comparison groups; ≈ = No effect compared to comparison groups; Δ = mixed effects compared to comparison groups; Imm. = immediate; M= months.

Study	Outcome	Time frame	Comparison group	Follow up period and effect				
				Imm.	3 M	6 M	9 M	12 M
INTERVENTIONS COMPARED TO NO INTERVENTION								
Deitz (2011)	Problematic prescription drug use (Yes/No)	NR	Wait-list control	≈				
Lee (2010)	Marijuana use (days)	Past 3 months	No intervention		≈	≈		
Schwinn (2010)	Marijuana use (frequency scale)	Last 30 days	No intervention	≈		✓		
	Polydrug use (frequency scale)	Last 30 days	No intervention	≈		✓		
Tossman (2011)	Cannabis use (days)	Last 30 days	Wait list control		✓			
Williams (2005)	Drug use (frequency scale)	Current	Wait list control	≈				
INTERVENTIONS COMPARED TO USUAL CARE								
Gilbert (2008)	Drug use (yes/no)	Current	Usual care	✓	✓			
	Drug use (days)	Past month	Usual care	≈	≈			
Newton (2009;2010)	Cannabis use (frequency scale)	Past 3 months	Usual health classes	≈		✓		≈
INTERVENTIONS COMPARED TO ALTERNATIVE INTERVENTION								
Budney (2011)	Cannabis use (% days use)	Last 90 days	Therapist delivered therapy	≈				
Kay-Lambkin (2009)	Cannabis use (occasions per day)	Past month	Brief intervention only				✓	
Marsch (2006)	Marijuana use (frequency scale)	Current	Alternative drug prevention training	≈				

Table 4: Observed effects on drug-related knowledge, attitudes, beliefs, intentions and self efficacy

✓ = Positive effects compared to comparison groups; ≈ = No effect compared to comparison groups; Δ = mixed effects compared to comparison groups. * Epstein (2007) includes two computer based interventions (see Table 2). In the majority of cases, findings were the same for both interventions. However, in a small number of cases, findings differ between interventions and in these cases a Δ symbol has been used to indicate that results are mixed. Imm = immediate; W = weeks; M = months.

Study	Outcome	Comparison group	Follow up period and effect						
			Imm.	2W	1 M	4M	6 M	9 M	12 M
INTERVENTIONS COMPARED TO NO INTERVENTION									
Deitz (2011)	Knowledge (prescription drug properties)	Wait-list control	✓						
	Knowledge (prescription drug administration)		≈						
	knowledge (prescription drug alternatives)		≈						
	Self efficacy (medication adherence, handling problems arising from administration)		✓						
Duncan (2000)	Self efficacy (refusal of drugs by stranger)	No intervention	✓						
	Self efficacy (refusal of drugs by friend)		≈						
	Intention (refusal of marijuana in next 6M)		✓						
	Intention (refusal of illegal drugs in next 6M)		≈						
	Attitudes (peer pressure)		✓						
	Attitudes (decision making about drugs)		≈						
	Attitudes (social perceptions)		≈						
	Attitudes (personal use to escape problems)		≈						
	Attitudes (respect towards personal choice)		≈						
Epstein (2007)*	Knowledge (drugs)	No intervention	✓		≈	≈			
	Knowledge (brain)		Δ		≈	≈			
	Knowledge (drugs & brain)		Δ		≈	≈			
	Knowledge (genetics)		≈		≈	≈			
	Knowledge (risk & protective factors)		Δ		≈	≈			
	Knowledge (consequences of use)		≈		≈	≈			
	Knowledge (treatment for abuse)		≈		≈	≈			
	Attitudes (drugs)				≈	≈			
	Attitudes (risks of trying drugs)				≈	≈			
	Attitudes (risks of using drugs)				≈	≈			
	Attitudes (peer drug use)				≈	≈			
	Rickert (1993)		Knowledge (alcohol & marijuana)	No intervention	✓				
Schinke (2004)	Attitudes (social perceptions)	No intervention	✓						
	Attitudes (personal perceptions)		≈						
	Intentions (plan to do drugs)		≈						
Tossman (2011)	Self efficacy (cannabis related)	Wait list control	✓						
Williams (2005)	Knowledge (drugs)	Wait list control	≈						

Study	Outcome	Comparison group	Follow up period and effect						
			Imm.	2W	1 M	4M	6 M	9 M	12 M
	Attitudes (pro-drug)		✓						
INTERVENTIONS COMPARED TO USUAL CARE									
Newton (2009;2010)	Knowledge (cannabis)	Usual health classes	✓				✓		✓
	Attitudes (cannabis)		≈				≈		≈
INTERVENTIONS COMPARED TO ALTERNATIVE INTERVENTION									
Budney (2011)	Self efficacy (avoiding cannabis use)	Therapist delivered therapy	≈						
Marsch (2006)	Knowledge (drug abuse)	Alternative drug prevention training	✓						
	Attitudes (marijuana use)		≈						
	Intentions (marijuana use next year)		≈						
	Intentions (to say "not now" to drugs if offered)		✓						
Schinke (2005)	Beliefs (drugs are a good way to handle stress)	Conventional drug abuse programme		✓					
	Intentions (marijuana use in next year)			✓					
	Intentions (drug use in next year)			≈					
	Intentions (drug use if best friend offered)			≈					

Table 5: User and professional acceptability

This table only includes those studies that measure user acceptability or professional acceptability

Author and year	User acceptability	Professional acceptability
Budney (2011)	Mean ratings (out of 10) Easy to understand (9.1) Like using the computer (8.8) Likely to help others (8.8) Useful as part of a treatment programme (8.7) Teaches/quizzes (8.3) Likely to help with quitting marijuana (8.3) Compares to previous education/training sessions (8.2) Interesting (8.0) Provided new information (7.5) Answered questions about the topic (7.1) Liked the video (7.1)	Not explored
Deitz (2011)	90% found programme easy to navigate 86% found programme useful 84% found programme interesting 67% found programme motivating	Not explored
Epstein (2007)	Students in the website group rated their satisfaction of the intervention significantly lower (58.8) than students in the CD (68.0), workbook (64.5) or video groups (64.2).	Teachers thought that the interventions fitted well within their curriculum and that students benefitted from participation.
Gilbert (2008)	97% of participants "liked" the programme 93% reported that the programme was too long 4% wanted more privacy when using the computer	Not explored
Marsch (2006)	Mean ratings (out of 100) Program was useful (~70) Learned a great deal about what to do when offered a drug (~70) The programme was interesting (~75) The programme was fun (~70) The programme compares to previous drug education (~75)	The paper reports that teachers using HeadOn thought that the programme was highly useful in providing drug abuse prevention in the classroom.
Newton (2010)	Paper reports that students provided positive feedback about the programme and found the course to be an acceptable means of school drug education. 93% found cartoon delivery appropriate and enjoyable 85% would use information in their own lives	Paper reports that teachers provided positive feedback about the programme and found the course to be an acceptable means of school drug education 91% agreed that course met outcomes of syllabus; 92% agreed that students liked the programme; 72% endorsed the programme as better than other education programmes; 75% indicated they would use the course in the future and recommend it to others.

2.5. SBIRT interventions in primary care and in emergency departments

2.5.1. Are SBIRT interventions effective in primary care settings?

The effectiveness of SBIRT and/or brief interventions within primary care is fairly well-established for alcohol use, with several reviews and meta-analyses demonstrating positive outcomes in improving drinking behaviours (e.g. Kahan et al, 1995; Ballesteros et al, 2004; Bertholet et al, 2005; Moyer et al, 2002; Whitlock et al, 2004; Kaner et al, 2009). The evidence base is less developed around the use of SBIRT in primary care for reducing illicit drug use. However, there have been some encouraging studies demonstrating that positive results can be achieved. For instance, an international study conducted by the World Health Organization across four different countries (Australia, Brazil, India and the US) investigated the effects of SBIRT in a variety of primary care settings to reduce illicit drug use. Compared to a control group, the study reported significantly lower follow-up scores compared to baseline for all illicit drug use, cannabis, stimulants and opioid use (WHO, 2008).

There have also been numerous large scale studies conducted in the US that have demonstrated positive drug outcomes in relation to SBIRT programmes. For instance:

- Evaluation of SBIRT services targeting over 55,000 adult patients at rural health clinics in New Mexico found a reduction in illicit drug use six months following intervention (Gryczynski et al, 2011).
- In Harris county, Texas, a SBIRT programme provided screening (and follow on intervention or referral if required) to over 59,000 patients for alcohol or drug use problems at health care settings (community health care centres, inpatient and outpatient centres, and emergency departments). At a six month follow-up, there was an overall reduction in the number of patients reporting any days of drug use (from 82% at intake to 33% at follow up), as well as the mean number of days of drug use (8.3 days at intake to 4.2 days at follow up; The InSight Project Research Group, 2009).
- An intervention conducted in multiple health care sites across six US states screened over 459,000 patients for illicit drug and alcohol use. Around 16% were recommended for brief intervention, 3% for brief treatment and 4% for referral to specialty treatment. Among those that reported baseline illicit drug use, rates of use at a six month follow up were 68% lower than at baseline (Madras et al, 2008).

In summary, while there is a good body of evidence to suggest that SBIRT programmes can be effective in reducing certain risky behaviours (e.g. alcohol use) in primary care settings, the evidence base is still developing for illicit drug use. However, results from a few large scale studies, albeit mainly in the US, suggest that these types of programmes can also be effective and are likely to have potential within primary care settings.

2.5.2. Are SBIRT interventions effective in emergency department settings?

There are fewer studies investigating the effects of SBIRT programmes specifically within emergency departments. Additionally, as with studies conducted within primary care settings, there are more evaluations of programmes to reduce risky drinking behaviours than to reduce illicit drug use. In an early review paper, D'Onofrio and Degutis (2002)

examined 39 clinical studies of SBIRT programmes, of which four were based within emergency departments and two included emergency departments within multi-site settings. This review reported positive effects on a range of outcome measures relating to alcohol problems (e.g. decreased alcohol consumption, prevention of morbidity and mortality, fewer hospital visits, fewer social consequences, and an increase in referrals or treatment) for 32 of the included studies. Consequently, the authors recommended that SBIRT be incorporated into clinical practice in emergency department settings. More recently, several SBIRT studies conducted in emergency department settings have been found to be effective in decreasing alcohol consumption. For example:

- In the US, 1132 patients consuming alcohol levels above low risk limits consented and were enrolled in an SBIRT programme. Those receiving the intervention reported roughly three drinks less per week than controls at a three month follow up. However, these positive effects had decreased substantially at six month and 12 month follow ups, suggesting that the programme achieved only short term effectiveness (Academic ED SBIRT Research Collaborative, 2010).
- In Poland, 446 at-risk and dependent drinkers were randomly allocated to one of three conditions: screened only, assessed, and intervention. All three groups showed a significant decrease in at-risk drinking and the numbers of drinks per drinking day at a 12 month follow up. However, only the intervention group displayed decreases in all evaluation measures (e.g. mean number of drinking days per week; maximum number of drinks per drinking occasion, mean number of negative consequences from drinking; Cherpitel et al, 2010).
- In the US, 926 emergency department patients with risky drinking behaviours were randomly assigned to either intervention or usual care groups. Compared to the usual care group, the quantity of alcohol consumed by the intervention group at a three month follow up decreased by a much greater percentage (70% compared to 20%). Additionally, while both groups displayed a reduction in drinking frequency, fewer patients in the intervention group had repeat emergency department visits during the follow up period (Désy et al, 2010).

Whilst much less research exists investigating the effects of SBIRT programmes on illicit drug use in emergency department settings, some positive evaluations are beginning to emerge. For instance, in the US, a SBIRT programme was implemented in a number of hospital-based departments, including two emergency centers. At a six month follow up, both the number of patients reporting any days of drug use and the mean number of days of drug use had significantly reduced (The InSight Project Research Group, 2009; see previous section for more details). In a second study in the US, patients seen in an emergency department were screened for a substance use disorder and provided with a brief intervention, brief treatment, and referral to specialised chemical dependency treatment as appropriate. Compared to a comparison group (not receiving any additional services), patients who received a brief intervention were more likely to enter specialised chemical dependency treatment in the subsequent year. Furthermore, brief treatment was found to facilitate admission into chemical dependency treatment (Krupski et al, 2010).

Aside from the effects of SBIRT programmes on risky behaviours, there is some evidence that SBIRT programmes can have an effect on emergency department staff skills and confidence, increasing self reported confidence in ability to conduct SBIRT skills, responsibility to intervene, and utilisation of SBIRT skills (Academic ED SBIRT Research Collaborative, 2007). However, these positive increases appear to decrease with time (by

12 months), suggesting that booster sessions may be needed to sustain longer term changes.

In summary, there appears to be substantial evidence suggesting that conducting SBIRT programmes within emergency departments can be effective in reducing risky drinking behaviours among patients. Much less is known about the effects of such programmes in reducing illicit drug use. Although some positive findings have been reported, there is a need to develop the evidence base for these interventions before any firm conclusions can be drawn.

2.5.3. What are the barriers to implementation of SBIRT in emergency departments?

A number of studies have examined the barriers to implementing SBIRT within emergency departments. Some of the biggest challenges are the uncomfortable nature of the topic and finding a private location to enquire about a person's risky behaviours (Barnard et al, 2009; Vaca et al, 2007). Other significant challenges identified include:

- Lack of time to implement programme (The Academic ED SBIRT Research Collaborative, 2007; Vaca et al, 2007) or train staff (Déry et al, 2008);
- Lack of referral resources (The Academic ED SBIRT Research Collaborative, 2007; Déry et al, 2008);
- Lengthy approval process and informed consent forms (when conducted as a research project rather than implemented as standard care; Déry et al, 2008);
- Patient refusal to participate (Déry et al, 2008)
- Inadequate administrative support (Déry et al, 2008)
- Doubt regarding treatment efficacy and patient adherence (Déry et al, 2008)
- Perceptions that psychosocial interventions were not the responsibility of emergency health care professionals (Déry et al, 2008); and
- Low staff motivation (Déry et al, 2008).

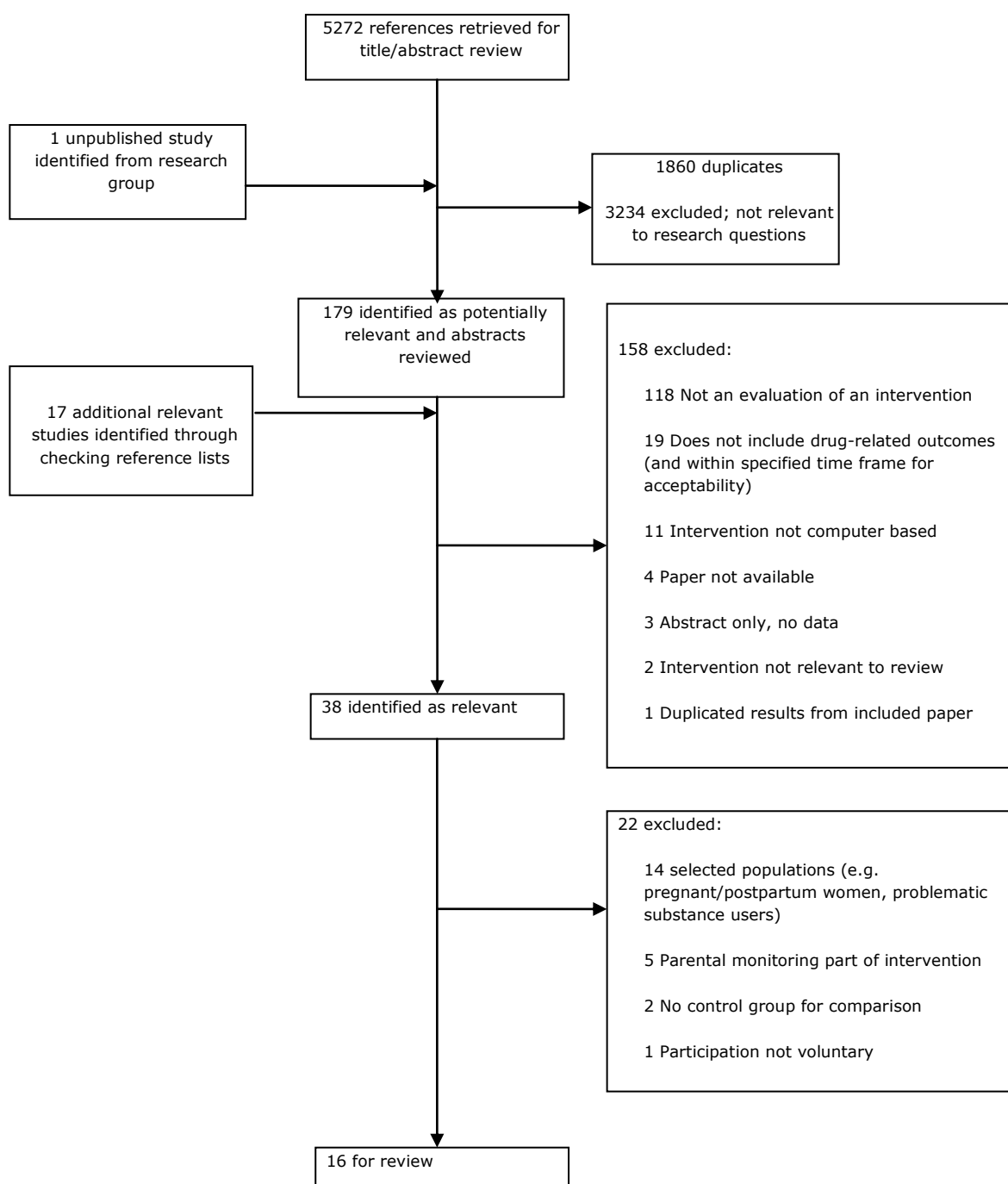
Some of these issues could be removed to some extent through using a computerised version of SBIRT. Here, the need for emergency department staff to ask screening questions face-to-face would be removed, and although a reasonably private location would still be necessary, there would be no risk of answers being overheard by others (i.e. screening may still be conducted within a quiet area of the waiting room). Additionally, the amount of time spent by emergency department staff on implementing the intervention would be greatly reduced.

2.6. Appendix

Table 6: Search strategy

1	(MH "Substance-Related Disorders+")	
2	AB/TI (Substance N2 abuse*) or (substance N2 use*) or (substance N2 misuse) or (substance N2 dependen*) or (substance N2 disorder*) or (substance N2 addict*) or (substance N2 volatile) or (substance N2 poly)	
3	AB/TI (Drug N2 abuse*) or (drug N2 use*) or (drug N2 misuse) or (drug N2 dependen*) or (drug N2 disorder*) or (drug N2 addict*) or (drug N2 volatile) or (drug N2 poly)	
4	cannabis or hashish or marijuana	
5	N-Methyl-3,4-methylenedioxyamphetamine or ecstasy or MDMA	
6	crack cocaine or cocaine	
7	GHB or gamma-Hydroxybutyric acid or gammahydroxybutyrate or gamma hydroxybutyrate or gamma hydroxyl butyrate or sodium oxybate	
8	Or/1-7	
9	AB/TI (screening N2 tool*) or (screening N2 instrument*) or (screening N2 test) or (identify* N2 tool*) or (identify* N2 instrument*) or (identify* N2 test)	
10	AB/TI (brief N2 advice) or (brief N2 intervention*) or (brief N2 interview*)	
11	AB/TI (motivational N2 advice) or (motivational N2 intervention*) or (motivational N2 interview*)	
12	AB/TI (Referral N2 guide*) or (Referral N2 guidance) or (Referral N2 tool*) or (referral N2 protocol*) or (referral N2 instrument) or (referral N2 pathway)	
13	AB/TI (referral N2 treatment)	
14	AB/TI (Self-help or self-edu* or edu* or guid* or program* or module*)	
15	AB/TI (Goal AND setting)	
16	Or/9-15	
17	8 and 16	
18	AB/TI (online or internet or web or world wide web or electronic or web site or web page or technology or computer*)	
19	17 and 18 (Medline)	1823 (1811)
	ERIC	384 (384)
	PsycINFO	801 (801)
	Cochrane	328 (328)
	ASSIA	308 (308)
	Social Sciences Citation Index	1075 (1075)
	CINAHL	518 (518)
	IBSS	47 (47)
	TOTAL	5284 (5272)
	EndNote removal of duplicates (1337)	3935
	Manual removal of duplicates (523)	3412

Study selection flowchart



3. eSBIRTes intervention

3.1. Step 1: Screening

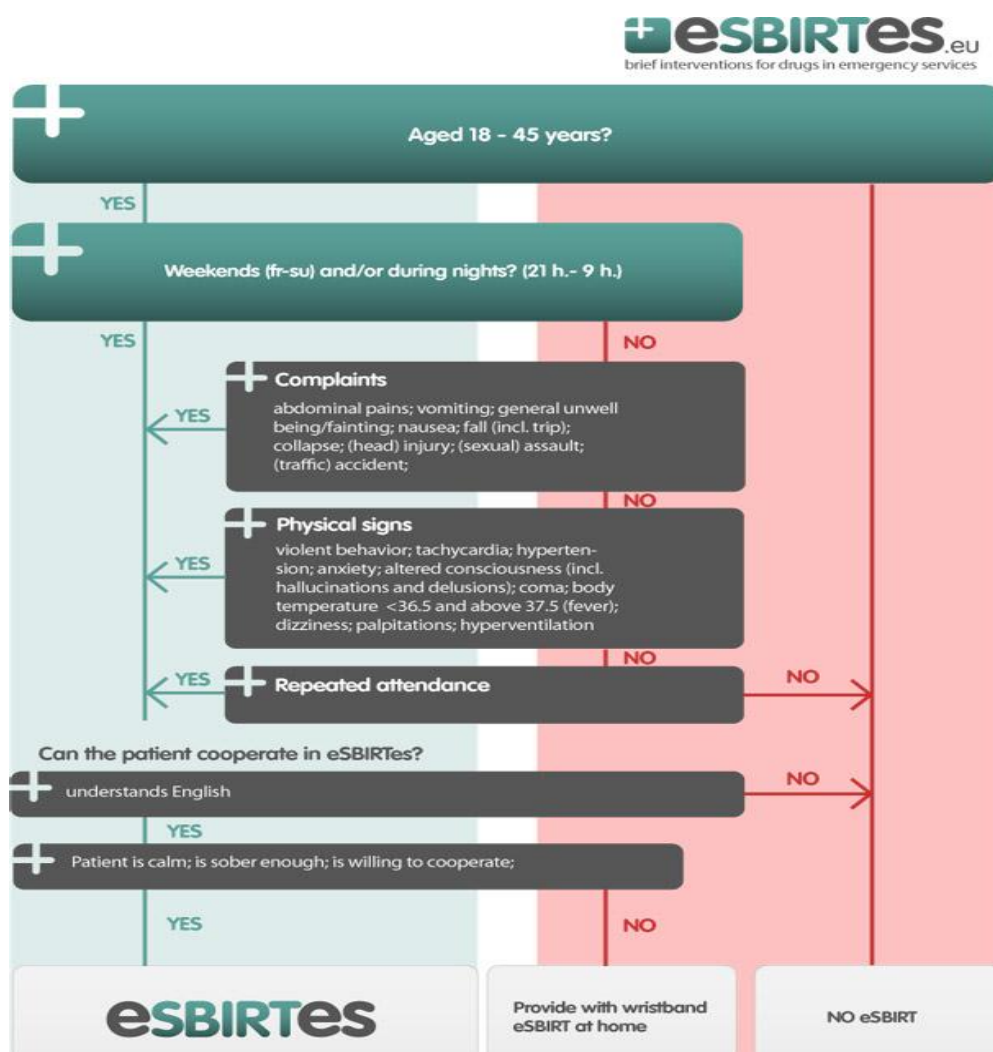
3.1.1. Criteria for screening

Within the confines of an ED it is often not feasible to screen every client. Therefore our team developed a set of criteria for ED staff to increase the chance to approach those clients with the highest prevalence of alcohol and drug misuse. The criteria are mainly based on age, language, timing and symptoms or complaints.

Included in the screening are:

- age: clients between 18 and 45 years of age;
- language: English, Dutch and/or Hungarian speaking clients;
- timing: clients attending the ED:
 - on weekdays from 21h PM until 9h AM;
 - continuously during the weekends.

Exception: clients attending ED on weekdays during the day will also be screened if they manifest symptoms often related with alcohol or drug problems.



3.1.2. Electronic version ASSIST

Based on the literature review and agreement between partners the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST, WHO) has been chosen for applying in the electronic screening component of the intervention. The ASSIST was developed for the World Health Organization (WHO) by an international group of substance abuse researchers to detect and manage substance use and related problems in primary and general medical care settings. The instrument addresses participants' use of tobacco, alcoholic beverages, cannabis, cocaine, amphetamines, inhalants, sedatives, hallucinogens and opioids for non-medical purposes. For this project, GHB was added to the questionnaire. Questions cover:

- if the participant has ever used a particular substance
- if they are currently using a particular substance (use in the past three months)
- if they have had a strong desire or urge to use a substance
- if their substance use has led to health, social, legal or financial problems or a failure to do what is normally expected of them
- if a friend or relative has ever expressed concern about their use
- if they have ever tried and failed to control, cut down or stop using a substance

Based on the participant's responses to the above, they are given a risk score for each substance they have used or currently use. Participants may be at low, moderate or high risk of experiencing harms related to their substance use.

The decision to use the ASSIST was supported by the following information:

- Based on systematic literature review two screening instruments were identified as possibly suitable for SBIRT – in our project: DAST and ASSIST
- Wide ranging positive experiences were available with the finally chosen ASSIST
- The advantages of the ASSIST tool:
 - high construct, and discriminative validity;
 - evidence of high acceptability and ease of use among individuals;
 - it has already been tested in a wide variety of countries, including those within Europe;
 - ability to distinguish between three risk groups: low, medium and high risk users.


The ASSIST was available in all necessary languages except for Hungarian. Therefore, the instrument has been translated to Hungarian according to the guidelines of WHO. The questions and instructions were translated and back-translated and consulted and modified by an expert panel of 10 persons.

The online screening tool (<http://assist.esbirtes.eu/en/assist>) starts with the gathering of demographic and health condition information (age, gender, hospital code, symptoms and/or complaints) recorded by hospital staff.

The screenshot shows the ASSIST online screening tool interface. At the top, the logo 'esBIRTES.eu' is displayed with the tagline 'brief interventions for drugs in emergency services'. The main heading is 'Select or add the complaints or physical characteristics'. Below this, there are two columns of checkboxes for selection. The 'Complaints' column includes: Abdominal pains, Vomiting, Chest pain, Nausea, Fall, Collapse, (Head) injury, (Sexual) assault, (Traffic) accident, Generally feeling unwell, and Repeated attender. The 'Physical characteristics' column includes: Cramps, Tachycardia, Hypertension, Anxiety, Altered consciousness, Coma, Altered body temperature, Dizziness, Hyperventilation, and Palpitations. Below these columns is a text input field labeled 'Add complaints or physical characteristics' with a green '+' button next to it. A note below the input field says 'Click '+' to add extra symptoms or complaints'. At the bottom, there are two buttons: 'Back' and 'Continue ►'.

After this, the client is asked to fill out his substance use data collected using the ASSIST screening tool. Clients who were unwilling or unable to complete the screening in hospital were given a wristband with a link that would allow completion of the screening at a later point in time (i.e. from a home computer with internet access).

The screenshot shows the ASSIST online screening tool interface for the 'Yes, the patient is willing to take part in the survey' screen. At the top, the logo 'esBIRTES.eu' is displayed with the tagline 'brief interventions for drugs in emergency services'. The main heading is 'Yes, the patient is willing to take part in the survey'. Below this, there is a text instruction: 'Click "continue" and hand the Ipad to the patient'. A green 'Continue »' button is positioned to the right. Below a horizontal line, the heading 'No, the patient cannot cooperate because he ...' is shown. Under this heading, there are four checkboxes: 'is aggressive', 'is too heavily under the influence of drugs or alcohol', 'is not in a position to cooperate', and 'refuses to cooperate and refuses the wristband'. To the right of these checkboxes is a box labeled 'Unique wrist band code' containing a text input field with the placeholder 'Unique wrist band co' and a green 'Send »' button.



1 2 3 4 5 6 7 8

In your life, which of the following substances have you ever used? This is only about non-medical use:

This is only about non-medical use:

- the use of medication not prescribed by a doctor. Attention: only the medication that you find in the questionnaire is relevant; not other medication or medication you can buy without prescription in a pharmacy;
- the use of medication on prescription but more frequently, in larger quantities or in another way than prescribed;
- Use for a purpose other than for which it was prescribed

Some examples:

- The use of prescribed Ritalin to stay awake rather than concentrate;
- Dissolving pills and injecting them instead of swallowing;
- Use of prescribed sedatives to unwind after use of a stimulants instead of going to sleep;
- The use of prescribed medication to improve performance or to obtain a euphoric feeling.

☐ Tobacco products examples

☐ Alcoholic beverages examples

☐ Cannabis hide
 marijuana, pot, grass, hash, etc.

☐ Cocaine hide
 coke, crack, base coke etc.


3.1.3. Results / overview risks

The screening can result in 3 different outcomes: low, moderate or high risk. These results are displayed using a slide bar which indicates which risk level the client has reached. Together with this slide bar, the client receives an overview of potential risks for each substance used. Depending on the risk level reached, a different trajectory is offered:

- Low risk:** Clients are provided with a brief advice and links to either local or national drug information websites
- Moderate risk:** Clients with a moderate risk on GHB, cannabis, cocaine and/or alcohol are referred to the online self-help module (DASH)
- High risk:** Clients are provided with brief advice to seek professional help and information from the online alcohol and drug-specific referral guide. If clients are not motivated for referral to treatment, they can choose to be directed to the self-help module

Below, examples on the display of each risk level are shown:

Score: Low

1 2


Result: Low

According to your current usage, you are rather at low risk of these health problems. However, if you are worried about your use of drugs, feel free to talk to the doctor about it, or get in contact with www.Drugscope.org (Illegal drugs) www.talktofrank.com (Illegal drugs) www.smokefree.nhs.uk (Tobacco) www.drinkaware.co.uk (Alcohol)

Please note when using illegal drugs, the quality and purity vary widely. Because of this, even small amounts can lead to serious health problems.

Your risk of experiencing these harms is

Alcoholic beverages




Regular use of alcohol is associated with:

- Hangovers, aggressive and violent behaviour, accidents and injury, nausea and vomiting
- Reduced sexual performance and premature ageing
- Digestive problems, ulcers, inflammation of the pancreas and high blood pressure
- Anxiety and depression, relationship difficulties
- Financial and work problems
- Difficulty remembering things and solving problems
- Birth defects and brain damage in babies of pregnant women
- Stroke, muscle and nerve damage
- Liver and pancreas diseases
- Cancers
- Suicide

Smoke Finish

Score: Moderate


1

Result: Moderate

With your current use of alcoholic beverages, cannabis, cocaine & GHB, you are at increased risk of these health and other problems. Therefore you will receive an email with an invitation to take part in an online self help program (Drugs and Alcohol Self Help - DASH). Of course, your participation is voluntary, anonymous and free of charge.

Your risk of experiencing these harms is


Alcoholic beverages




Regular use of alcohol is associated with:

- Hangovers, aggressive and violent behaviour, accidents and injury, nausea and vomiting
- Reduced sexual performance and premature ageing
- Digestive problems, ulcers, inflammation of the pancreas and high blood pressure
- Anxiety and depression, relationship difficulties
- Financial and work problems
- Difficulty remembering things and solving problems
- Birth defects and brain damage in babies of pregnant women
- Stroke, muscle and nerve damage
- Liver and pancreas diseases
- Cancers
- Suicide

Cannabis



Score: High



12

Result: High

As a result of your current use of GHB, you are at high risk of experiencing serious problems. You might already have experienced some of these problems yourself. It is highly probable that you aren't in control of your use anymore or that you will experience problems in the near future. Therefore we can provide you an easy way to find treatment. If you are interested in a list of treatment centers in your neighborhood, [click the link. http://helpfinder.drugscope.org.uk/](http://helpfinder.drugscope.org.uk/)

Your risk of experiencing these harms is


GHB

The use of GHB can lead to:

- Short Term Memory Loss
- Dizziness
- Diminished fine motor skills
- Bradycardia (heart arrhythmia in which the frequency of heart rate may drop below sixty beats per minute);
- Hypothermia
- Effects speech coordination (speaking with double tongue)
- Balance disorders
- Nausea
- Vomiting
- Cardiac Arrest
- Coma

Continue ▶

After having completed the questionnaire and having seen the results on screen, the client also receives the results in his mailbox.



brief interventions for drugs in emergency services

Je ontvangt deze mail omdat je deelgenomen hebt aan het eSBIRTes-programma op de spoedafdeling.

Om je zo goed mogelijk te helpen om te minderen of te stoppen met alcohol of andere drugs, vind je hieronder nog eens je resultaten. Deze resultaten kreeg je al eens te zien meteen nadat je de vragenlijst had ingevuld in het ziekenhuis.

Risiconiveau: Matig risico

Met je huidige gebruik van alcoholische dranken & cocaine loop je een verhoogd risico op onderstaande gezondheids- en andere problemen. Indien je een matig risico loopt door het gebruik van alcohol, cannabis, GHB of cocaine zal je via email worden uitgenodigd worden om vrijwillig deel te nemen aan een online zelfhulpprogramma (Drugs and Alcohol Self Help - DASH). Uiteraard is je deelname anoniem en gratis.

Alcoholische dranken

Regelmatig en overmatig alcoholgebruik kan leiden tot:

- Katers, agressief en gewelddadig gedrag, ongevallen en letsel
- Verminderde seksuele prestaties, vroegtijdig verouderen
- Spijsverteringsproblemen, maagzweren, ontsteking van de alvleesklier, hoge bloeddruk

3.2. Step 2: Brief intervention

3.2.1. DASH

The eSBIRTes Drug and Alcohol Self Help module (DASH) (<http://dash.esbirtes.eu/english/>) is based on the 'drink less' intervention (<http://www.minderdrinken.nl>). This is a Dutch self help module for alcohol users which has been found to be effective in reducing problem drinking (Riper et al., 2008). The program facilitates the users effort to reduce their use by:

- Assisting in monitoring their use
- giving feedback
- providing support (tips, peers and experts)
- being non-judgmental (reflecting the users own values)

This web-based self-help intervention for problem alcohol and drug users without therapist guidance has a recommended treatment period of 6 weeks. The intervention is based on cognitive-behavioral and self-control principles. However, this program is not intended to replace professional care. If participants are in doubt about their using behavior, they can complete a self test for automated personal advice. When participants are heavy users and suffer from withdrawal symptoms they are advised to seek professional care. Furthermore, daily users of GHB will be discouraged from enrolling in the intervention at all and advised to seek professional help.

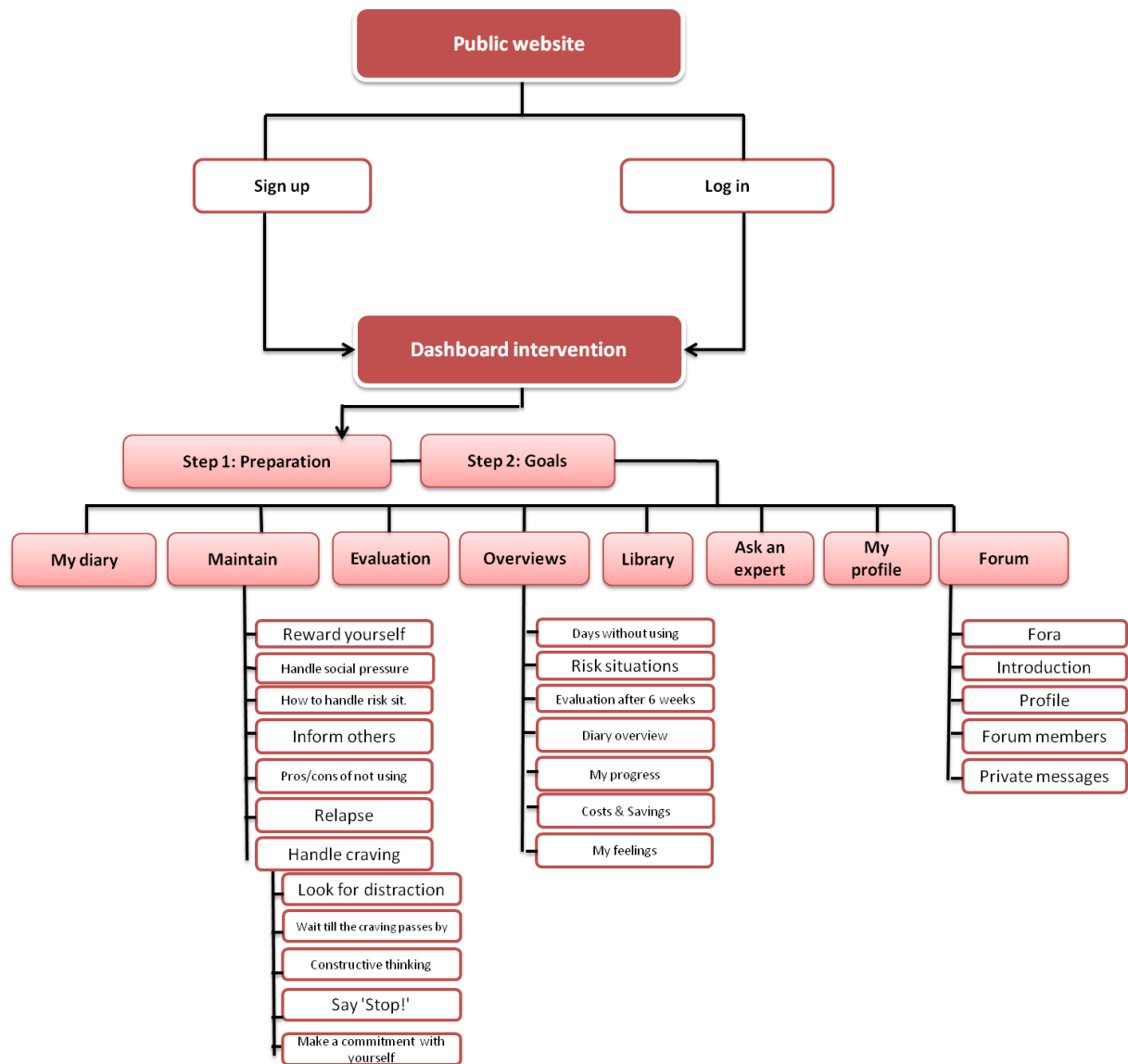
The program is developed for:

- adults (18+) who wish to cut down or stop using alcohol, cannabis, cocaine and/or GHB in a self reliant manner,
- adults who might still doubt whether or not to change their usage of alcohol, cannabis, cocaine and/or GHB
- adults who have cut down or stopped using and want to maintain this.

The generic web-based intervention is divided in two sections:

- The portal, which is a restricted website only accessible for people with the specific url.
- The program, the intervention itself, which is a password restricted area, only accessible after registration with a username and a password.

The following sitemap shows the structure of both sections.



To start the DASH, every first time user must sign up and complete a series of steps (profile completion, preparation, setting goals) before gaining access to the actual program.

The screenshot shows the DASH (Drugs and Alcohol Self Help) welcome page. At the top, the logo 'DASH' is displayed in large blue letters, with 'DRUGS AND ALCOHOL SELF HELP' in smaller orange letters below it. The page has a light blue background with a subtle grid pattern. On the left, a 'WELCOME' banner is followed by a text area that says 'Welcome to DASH: Drug and Alcohol Self Help'. Below this, it states 'DASH offers a FREE online program for people who want to reduce or stop using cannabis, cocaine, GHB and/or alcohol. You've been referred to DASH after first aid assistance due to substance use. DASH helps you to:' followed by a bulleted list: 'Prepare for change', 'Set your goals', 'Monitor your use', 'Maintain your new behavior', and 'Evaluate your progress'. Further down, it says 'What you would like to change with this online program is totally up to you. You're in control.' and 'Please notice, eSBIRTes is **NOT suitable for you if you use GHB regularly** (over twice a week). Cutting down regular use of GHB by yourself can be dangerous due to the severe withdrawal symptoms you could be experiencing. We recommend medical assistance in this process.' At the bottom of the text area, it says 'Sign up now if you want to start with DASH for the first time. Log in if you signed up before.' On the right, there is a 'SIGN UP NOW!' button with a pencil icon. Below it is a login form with fields for 'Username' and 'Password', a 'Forgot password' link, a 'Sign up' link, and an 'ENTER' button.

The *preparation* section establishes the problem and someone's motivation to change. The program gives feedback and asks whether someone would like to proceed with the program.

The screenshot shows the DASH dashboard. At the top, there is a navigation bar with tabs: 'DASHBOARD', 'MY DIARY', 'OVERVIEWS', 'LIBRARY', 'FORUM', and 'ASK AN EXPERT'. Below the navigation bar, the dashboard is divided into several sections. On the left, there is a 'PROFILE' section with a user icon, the text 'Welcome, david.mobius', and an 'EDIT MY PROFILE' button. Below this is a 'TIP' section with an exclamation mark icon and the text 'Did you know: that combi use can lead to unexpected (negative) effects'. Below the tip is a 'FORUM' section with a speech bubble icon, the text 'admin DASH What do you think of DASH? Please feel free to comment and help us make the program better!', and a 'GO TO THE FORUM' button. On the right, there is a 'TO DO' section with a checkmark icon. Below it is a 'PREPARATION' section with a 'START HERE' button. The 'PREPARATION' section contains six numbered steps: 1. Typical use (with a photo of a person), 2. Test your use (with a photo of a person), 3. Pros and cons (with a photo of a person), 4. Motivation (with a photo of a person), 5. Results (with a photo of a person), and 6. Go/no go (with a photo of a traffic light). Below the 'PREPARATION' section is a 'MY DIARY' section with a pencil icon. Below it is a 'GO TO MY DIARY' button. At the bottom, there is a 'CANNABIS COCAINE GHB ALCOHOL' section with a 'GO TO MY DIARY' button. Below this is a text box that says 'Finish the preparation step and setup your goals in order to use the diary.'

At this point, the client fills in what he normally uses, what the impact is on daily life (this is actually established by means of the ASSIST questionnaire, the same as the one used in the screening tool already filled out on the ED. Therefore, DASH will use the screening results by default and only asks whether this information is still accurate or not). Subsequently the program establishes how motivated the client is to change his behaviour by means of the "Readiness to Change Questionnaire". Finally, the client's results are summarised and the client is asked whether he would like to proceed or not.

DASHBOARD | **MY DIARY** | **OVERVIEWS** | **LIBRARY** | **FORUM** | **ASK AN EXPERT**

Dashboard > Motivation results

PREPARATION PRINT HELP

1 **Typical use**

2 **Test your use**

3 **Pros and Cons**

4 **Motivation**

5 **Results**

6 **Go/no go**

Cannabis

Your motivation level is not very high:

- According to the test you probably are not very motivated to change your cannabis use (yet).
- This is a point you might have to consider again, especially when your use is at a moderate of high risk level.
- Being motivated will help you to change your cannabis consumption.
- To increase your motivation you may have a look at the disadvantages you experience again.
- Remember you are in charge in this program. The decision and responsibility to cut down or stop using cannabis depends on you.

Cocaine

Your level of motivation is pretty high:

- According to the test you are motivated to reduce or stop your cocaine consumption. In fact you are already actively engaging in it.
- Keep up the good effort and continue to make efforts to cut-down or stop using cocaine.
- Going through all the steps of this program supports you strongly in in this process.

GHB

Your level of motivation is pretty high:

- According to the test you are motivated to reduce or stop your GHB consumption. In fact you are already actively engaging in it.
- Keep up the good effort and continue to make efforts to cut-down or stop using GHB.
- Going through all the steps of this program supports you strongly in in this process.

PROCEED

If the user decides he would like to proceed, he needs to set his goals. These can entail *stop using*, or *reduce using* a substance. But also for instance, *I don't want to use anything when I still have to drive*. Once the goal setting is done, the user can start the program.

GOALS

PRINT

HELP

Stop or reduce

1

Set your goals

2

Commitments

3

Results

4

Stop or reduce?

Congratulations! You've decided to continue this program and work on your substance use. Your next step starts here: setting your goals. Setting goals helps you:

- to plan your actions
- to monitor your progress
- to keep you motivated

But first, please indicate whether you would like to 'stop' or 'reduce' your substance use by ticking one of the boxes. If you don't want to make a change, tick the box 'no change'.

Cannabis

Stop

☒ Reduce

No change

Cocaine

Stop

☒ Reduce

No change

GHB

Stop

☒ Reduce

No change

Cancel

SAVE & PROCEED

The heart of the intervention is the **diary**. In the section, the client fills in what he used, when he used it, with whom and where.

DASHBOARD

MY DIARY

OVERVIEWS

LIBRARY

FORUM

ASK AN EXPERT

Dashboard > My diary

MY DIARY

PRINT

HELP

Friday March 22, 2013

Current week #: 1

Welcome to your diary!

Here you can fill in your experiences for every day of the week. Make sure you fill in something for every day because only then the system can provide you with correct feedback.

Week goals - In the upper right corner of the page you will find the goals you set for this particular week in the goal setting phase (week 1,2,3 or 4) and the amount you already indicated you used this week. This way you can monitor your use and see where you stand in relation to your goals.

Add a situation - If you have been in a situation where you used something, you can describe this by adding a situation and fill in all steps. You can also indicate how you felt about this particular situation.

Stayed clean - If you did not use anything you can push the stayed clean button. The system will then register this day as a day in which you did not use anything but also did not have any feelings about it.

IMPORTANT If you have been in a situation where you did not use anything but would still like to register it (for instance, because you are really proud you stayed away from the drug), you should fill in a situation in your diary anyway!

+ ADD NEW SITUATION

STAYED CLEAN

My week goals

I used

Cannabis: 0 joints

Cocaine: 0 lines

GHB: 0 ml

MARCH 2013

Mo

Tu

We

Th

Fr

Sa

Su

1

2

3

4

5

6

7

8

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11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1 – Filled in days

1 – Not filled in days

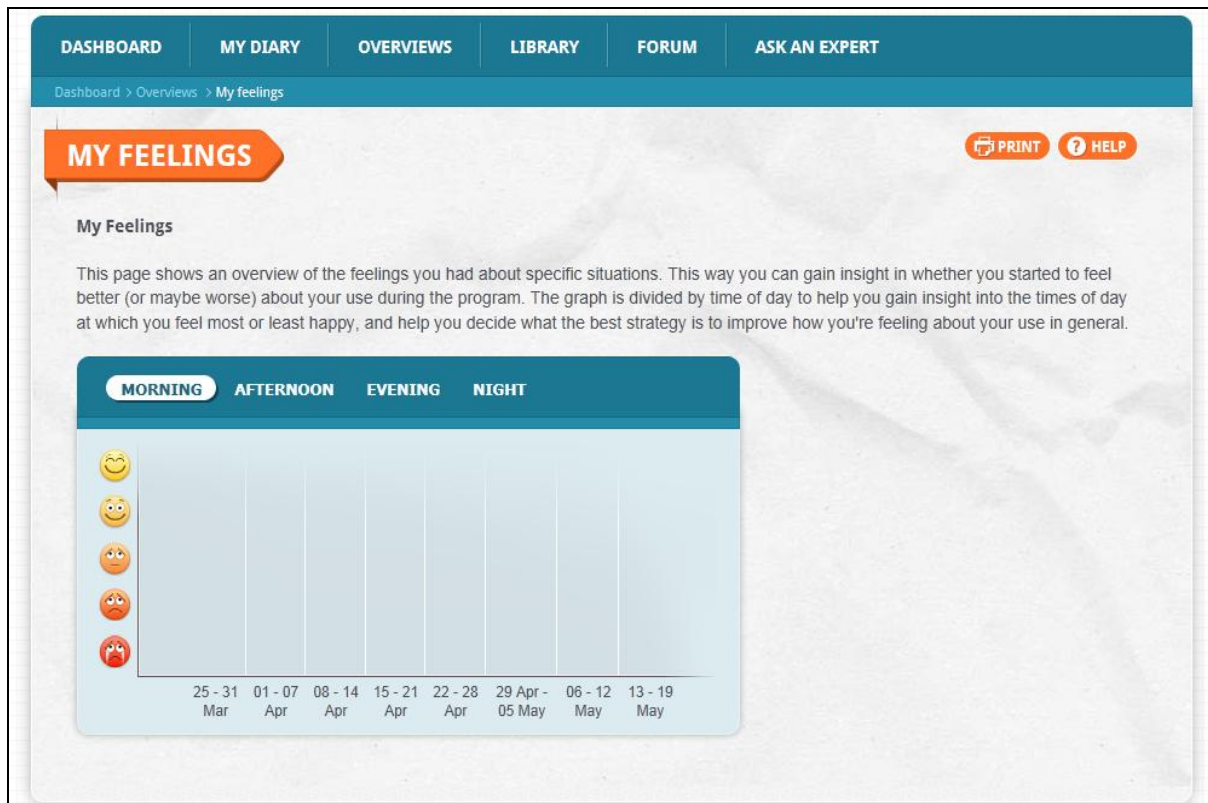
1 – Unavailable days

– Selected day

44

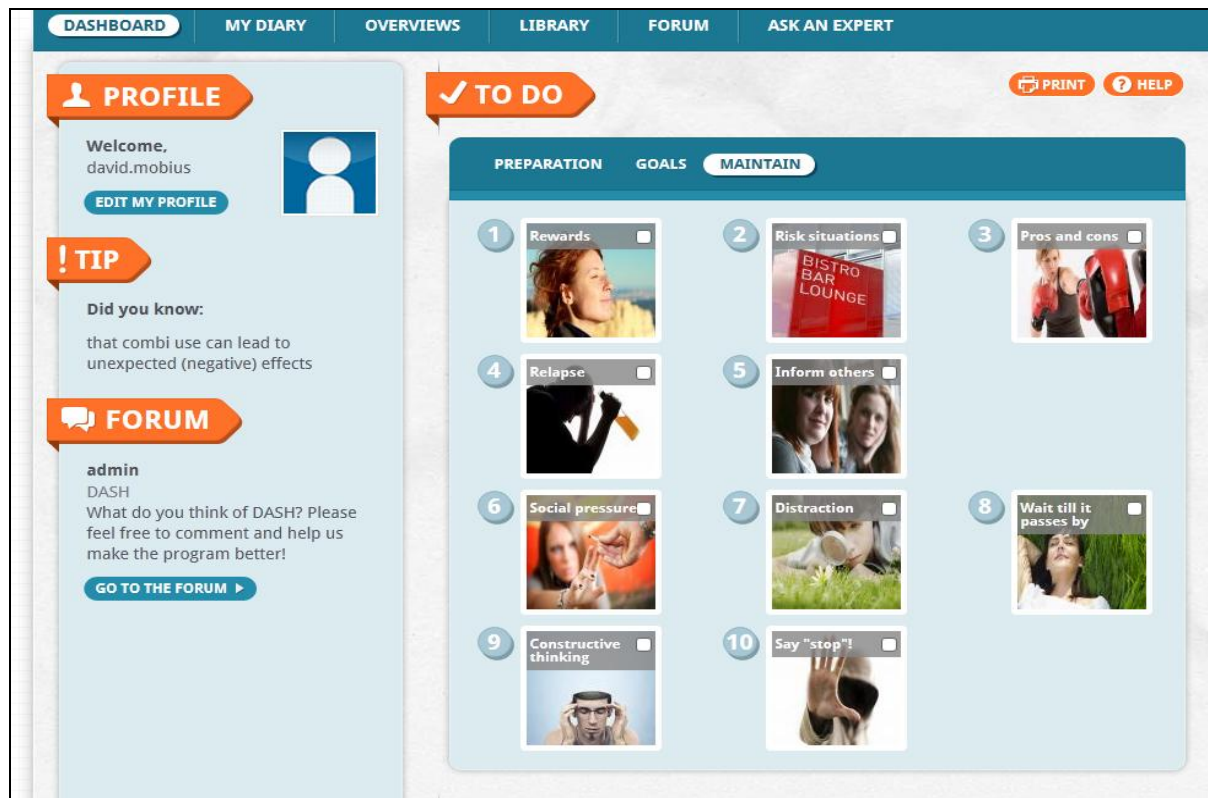
In the **overview section**, the client's progress is monitored. By means of graphs it tells him whether he managed to reach his goals (i.e. stay below his limits) or not. Also his commitments can be found here: e.g. did he manage to stay away from the coke on the nights he was DJ-ing?

All sorts of other information can be found here. For instance, based on the situations the client describes in his diary, the program tells the client which situations are risky and offers him support to help handle these situations.



The **maintain section** supports people while they are in the program. It provides exercises such as 'coping with relapse'. This exercise first explains that relapse does not equal failure. Subsequently it urges the client to describe the relapse situation and to think about ways of handling these kind of situations in the future in order to make sure it will not happen again. For instance, naming pro's and con's of reduced use makes the client think about all the positive things it brings but also the negative things. Subsequently it asks how to overcome these negative things.

Furthermore, the maintain section offers tips on various themes such as coping with social pressure and the importance of finding distraction.



Six weeks after having started the DASH, the client receives an email with an invitation to **evaluate** his progress. This evaluation asks

- Whether the client achieved his goals or not
- If he is happy with his progress
- If he would like to proceed with this program
- What his experiences with the SHM are

This web-based self-help intervention currently is available in 3 languages (English, Dutch and Hungarian) and can be adapted to a new target group, country and language through the Content Management System. This password protected online system allows the webmaster to edit or include dynamic content (text, images and multimedia material). The layout of the intervention and the functionalities will remain the same, nevertheless the design and content can be fully adapted.

3.3. Step 3: Referral to treatment

3.3.1. Online referral guide

Clients with a high score on any of the substances are being referred to the online referral guide.


Clients with a high score on alcohol, GHB, cannabis or cocaine have two options: either they go to the DASH or they can choose to access the online referral guide. By using this online referral guide, they can quickly and easily find a support centre that can help them with their alcohol or drug problem.

For Belgium and Hungary, clients first need to enter the postal code of the town or city they live in. Then, they can select one or more types of support. The contact details of one or more support centers matching their choice in a radius of 30 km around their home address will then be displayed. These results will also be automatically sent to their email address.

The screenshot displays the esBIRTES.eu website interface. At the top, the logo 'esBIRTES.eu' is shown with the tagline 'brief interventions for drugs in emergency services'. Below the header, the section 'Resultaten doorverwijzing' (Referral results) is active. It lists four support centers in a light green background. Each entry includes the center's name, address, contact information, distance, and a list of substances it treats.

Center Name	Address	Contact	Distance	Substances
MSOC - Medisch Sociaal Opvangcentrum Het Veerhuis - Siddhartha	D. Alenuslaan 6 - 3290 Diest	013 32 69 33 - wit_huis@hotmail.com	0 km	Illegale drugs
CGG - Centrum voor Geestelijke Gezondheidszorg Vlaams-Brabant Oost	Halensebaan 49B - 3290 Diest	013 31 25 84 - diest@cgg-vbo.be	0 km	Illegale drugs, Alcohol, Psychoactieve medicatie
MSOC - Medisch Sociaal Opvangcentrum Het Veerhuis - Siddhartha	Basilieklaan 75 - 3270 Scherpenheuvel-Zichem	013 77 83 59	10 km	Illegale drugs
CGG - Centrum voor Geestelijke Gezondheidszorg Vlaams-Brabant Oost				Illegale drugs, Alcohol, Psychoactieve medicatie

Clients living in the UK are linked to the Drugscope helpfinder (<http://helpfinder.drugscope.org.uk/>).

**Helpfinder**

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Search for services

Please [click here](#) to access a form where you can add or update your service details on Helpfinder.

Name & Region ↓

Service Name :

Matches all names containing the text above.

Town / City :

UK County :
(or London Borough) :

Region :

Catchment :

Search by Postcode ↓

Near to Postcode :

(e.g. BN1, RH11 etc.) Please also select a distance below:

Distance (in km) :

4. Pilot implementation

4.1. Needs Assessment

4.1.1. Introduction

Before the actual implementation phase, a needs assessment questionnaire was administered to emergency department (ED) staff members. This was considered to be extremely important as the staff members may not have been familiar with the tools introduced by the project team. Furthermore, the project team was not completely sure if the clients of the chosen units would be ready to make use of the offered self screening and referral arrangement. Based on the preliminary assumptions and interviews with the head doctors of the EDs in Hungary, a needs assessment questionnaire was developed and negotiated with the project team members to ensure a tailor made instrument. Below, the most important findings of the staff questionnaires are being summarised. The open ended questions were not included in this analysis as in most cases, apart from those remarks which concerned the estimated motivation (willingness) of the clients to take part, these answers did not reveal any further information. Rather, they supported the results presented in the sections below. The information obtained helped us in developing the training material for staff members. It also gave indications on the feasibility of the implementation process and the willingness and ability of ED staff members in implementing interventions.

The questionnaire was administered in two different ways:

- In Belgium a web based application was developed. The staff members of the chosen emergency departments filled in the questionnaires via the Internet.
- Both in Hungary and in the UK, hard copies of the questionnaires were distributed among staff members by the head doctors and collected by the project team members.

The data were combined into a comprehensive Excel file containing all the information covered by the questionnaires. Frequencies, standard deviations and percentages were calculated for the whole sample and for individual countries to be able to see differences among the countries. From the available data some basic conclusions were formulated regarding the general feasibility of the implementation and the obstacles seen by staff members. In addition, recommendations were made about the training material/course.

4.1.2. Results

4.1.2.1. Basic characteristics of the respondents:

The figures below describe the general features of the respondents from each country concerning their number, their gender and age.

Figure 1: Number and gender of respondents

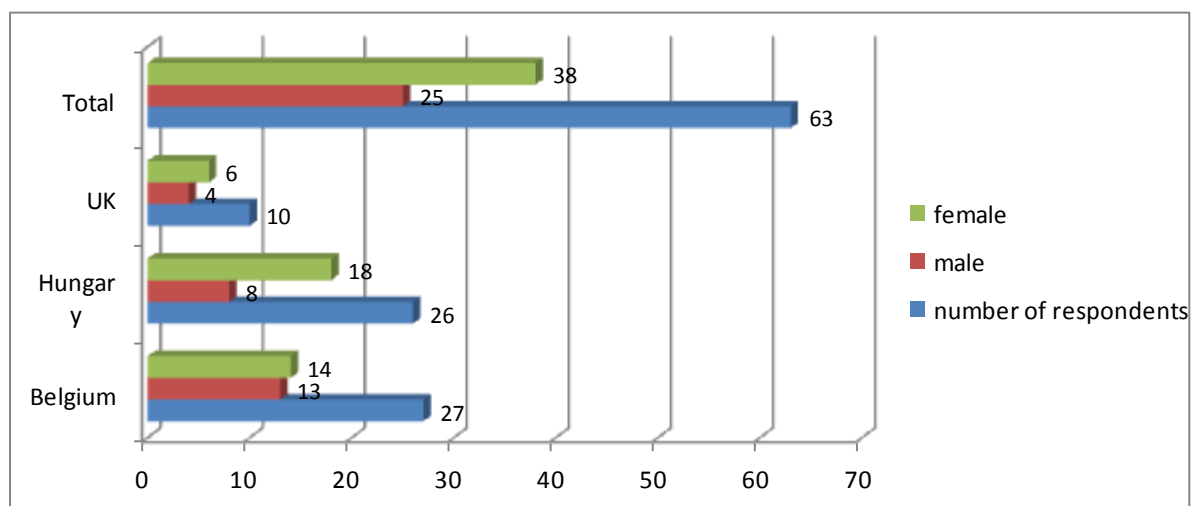
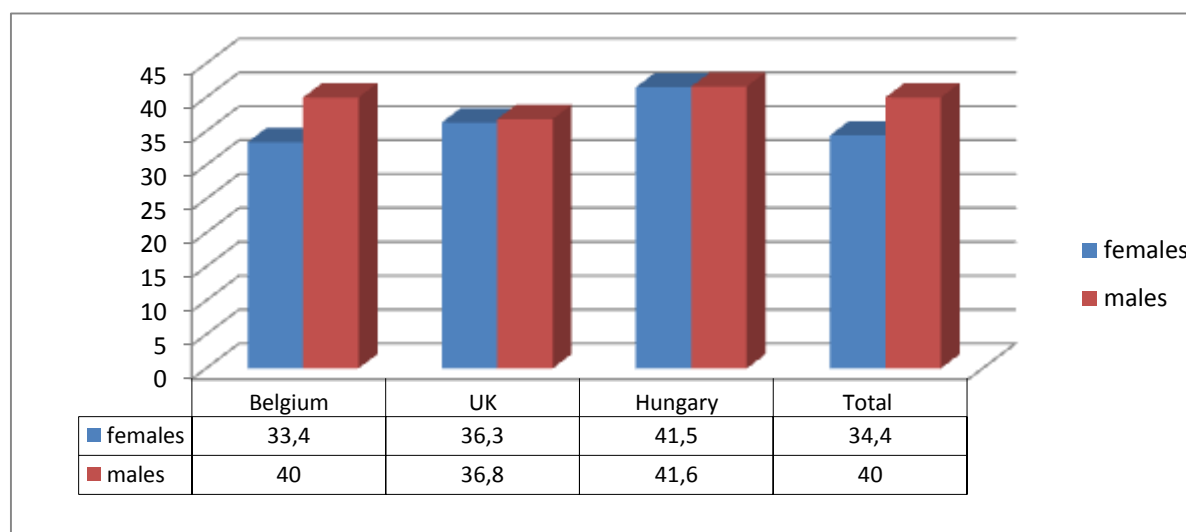


Figure 2: Mean age of the respondents



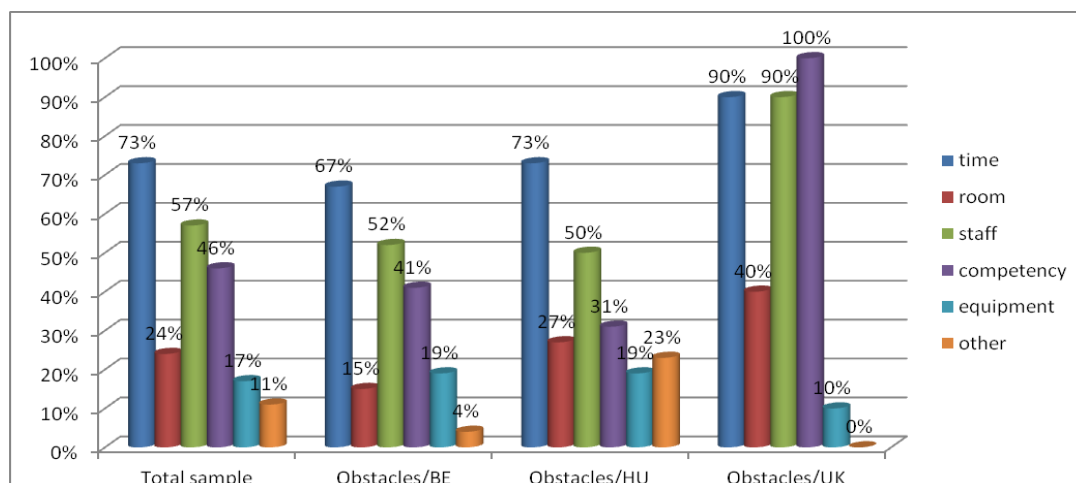
The youngest respondent was 23 years old, whilst the oldest one was 58. The mean age for the whole sample was 36.7 (SD: 12.2). The Hungarian respondents were slightly older than the respondents in the UK and in Belgium.

As far as the distribution of the professions is concerned we can say that almost $\frac{3}{4}$ of the respondents were nurses (73%), $\frac{1}{4}$ of them were medical doctors.

4.1.2.2. Obstacles seen by the respondents in everyday functioning without eSBIRTes (What problems or obstacles do you see concerning the routine health treatment of poly drug users in your emergency department?)

Emergency units are quite overwhelmed in general so it was important to see how difficult the staff members saw their everyday functioning without the planned additional service.

Figure 3: Perceived problems and obstacles in the routine health treatment of poly drug users
(Percentage of those who considered the specific resource problematic in the course of regular treatment and care of poly drug users in the total sample and in the specific countries)



As we see from the figure above the most problematic element of their functioning was the shortage in time. This was characteristic in all countries. The next most problematic area was the staff's availability, whilst the third one was the staff's competency. In this regard the differences were quite big, Hungarian staff members saw it as the least problematic and colleagues from the UK considered it the most problematic. Equipment and room¹ seem to be less problematic to staff in everyday functioning.

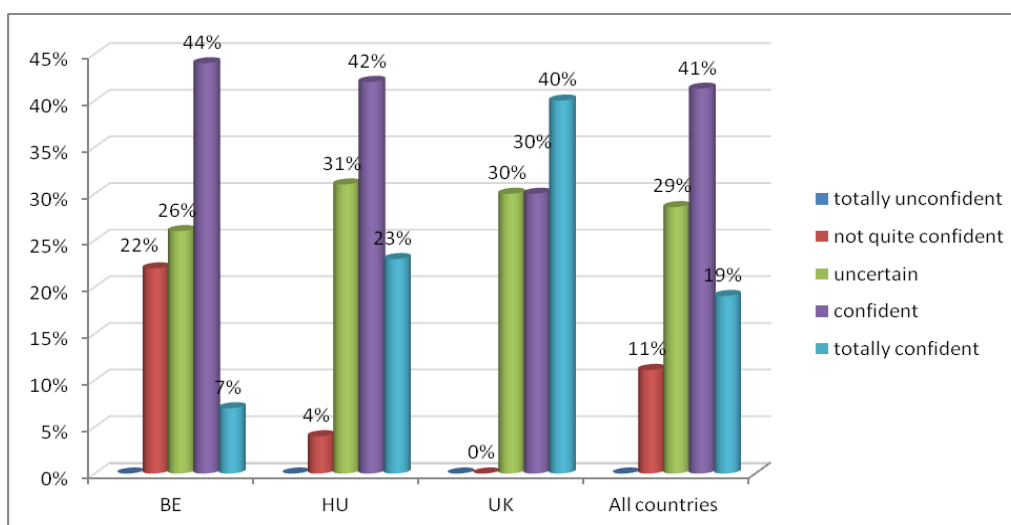
4.1.2.3. Responses related to the planned implementation of the eSBIRTes

How confident respondents considered themselves in identifying clients who are in need?

Regarding the actual implementation of the project, staff's ability, and especially perceived ability to recognise those clients who need further treatment and/or care, is considered important.

¹ The physical space to carry out their health care activities.

Figure 4: How confident respondents perceived themselves in identifying clients who are in need

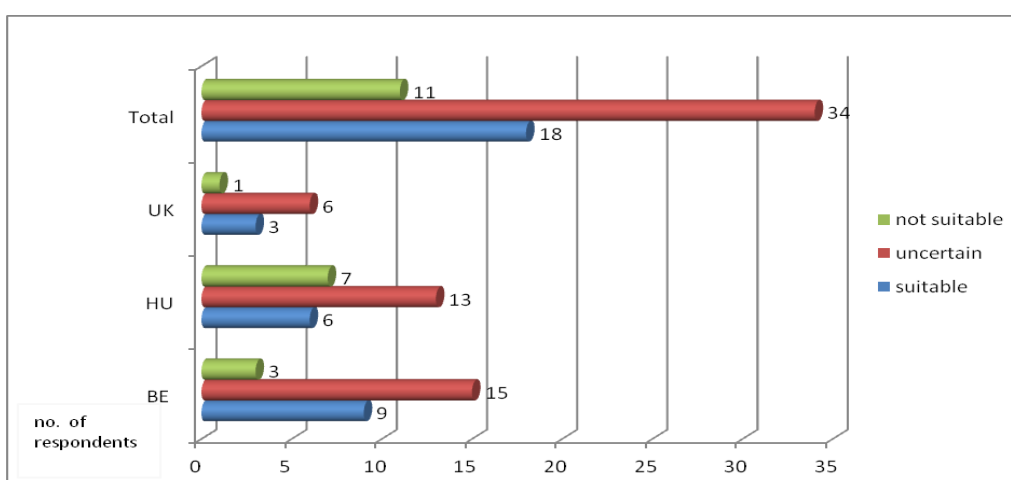


As we see from the figure above, the majority of respondents reported feeling totally confident or confident in identifying those who might need further help. About 30% of respondents were unsure. These responses suggested that the identification of clients needed to be addressed within the staff training material.

Are the conditions suitable to carry out the eSBIRTes project?

Staff members were not provided with detailed and specific information about the content and required effort of implementing the eSBIRTes project prior to training and actual implementation. So it was important to know what kind of general assumptions they had related to it. The figure below shows their answers in this regard.

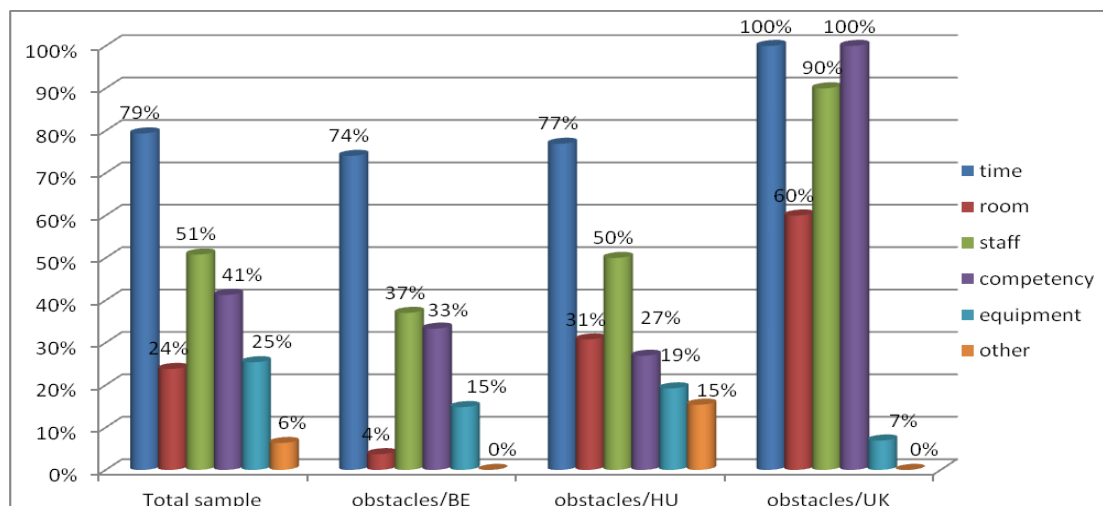
Figure 5: The suitability of the conditions for the implementation of the eSBIRTes developments



As we see from their answers most of the respondents were uncertain about the general feasibility of the planned development. This again suggested that the actual circumstances and the possible benefits of the intervention should be made clear and tangible for staff members within training materials.

Problems or obstacles seen by the respondents concerning the implementation of the eSBIRTes project

Figure 6: Problems or obstacles concerning the feasibility of implementing the eSBIRTes project
(Percentage of those who consider the specific resource problematic in the course of the implementation of the eSBIRTes project)

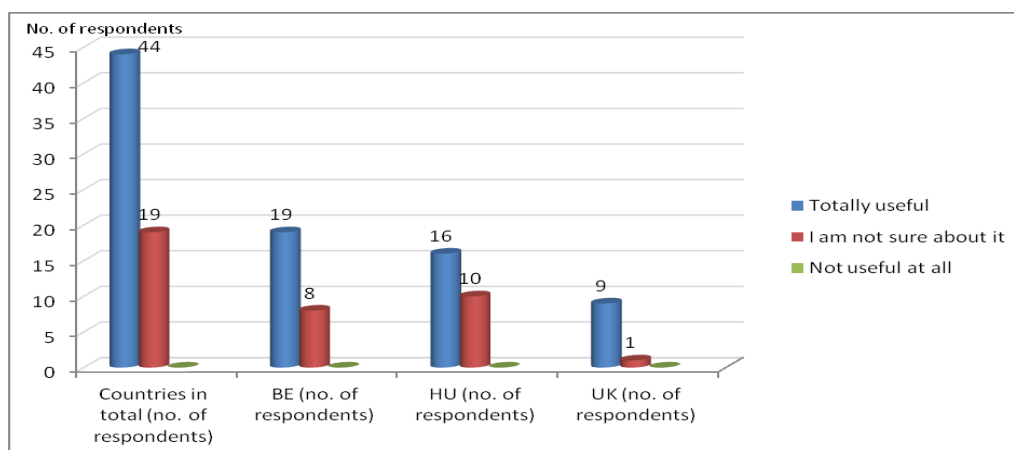


As we see in the figure above, the greatest problem throughout the whole sample was the shortage of time, the second one was the availability of the staff and third one was staff competency. There are differences among the countries; the UK colleagues reported the most difficulties as far as the feasibility of the implementation is concerned across all areas. The respondents had the opportunity to identify other, non pre-categorised problems as well. As we can see in the figure very few items were identified in this regard except in the case of respondents from Hungary. The Hungarian staff members mostly identified the lack of motivation of the clients as a major obstacle.

4.1.2.4. The perceived usefulness of the planned development

Even though obstacles and problems were foreseen by the respondents, there was a general agreement that the planned development would be a useful supplement to the services provided currently. Again there were some differences among the countries. The most uniformed positive expectations were formulated by the UK, whilst the relatively highest percentage of uncertainty was observed among the Hungarian respondents. It was our hope that the training session would increase the level of certainty among those who were hesitant when questioned

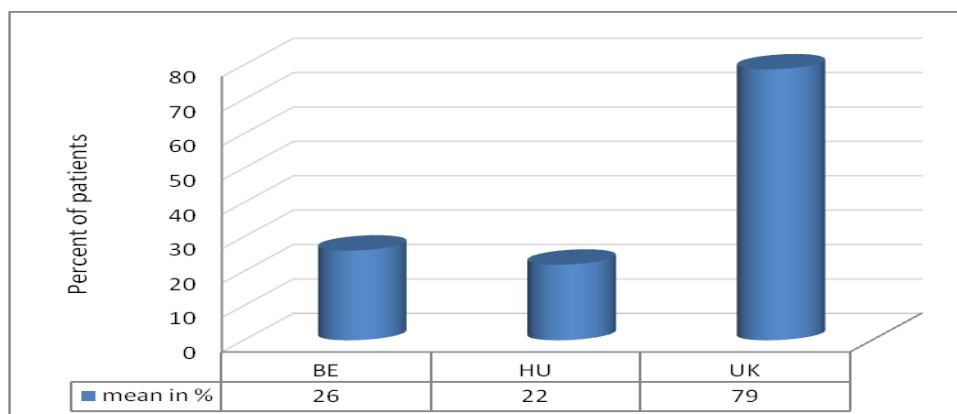
Figure 7: How useful the respondents see the prospective additional services which are being provided by the eSBIRTes project (number of respondents in total and per country)



The perceived willingness of clients to make use of the offered additional service

The willingness of clients to make use of tools offered to them was instrumental in the success of a project such as this. When asked what proportion of clients they felt would be willing to take part in the programme, respondents felt that around 30% of clients would be willing to use the web-based application. A substantial difference was found among the countries, with UK colleagues estimating that almost 80% of clients would be willing to participate, whilst Hungarian respondents estimated less than 20%.

Figure 8: The percentage of clients who are supposed (perceived) to be willing to participate in the program

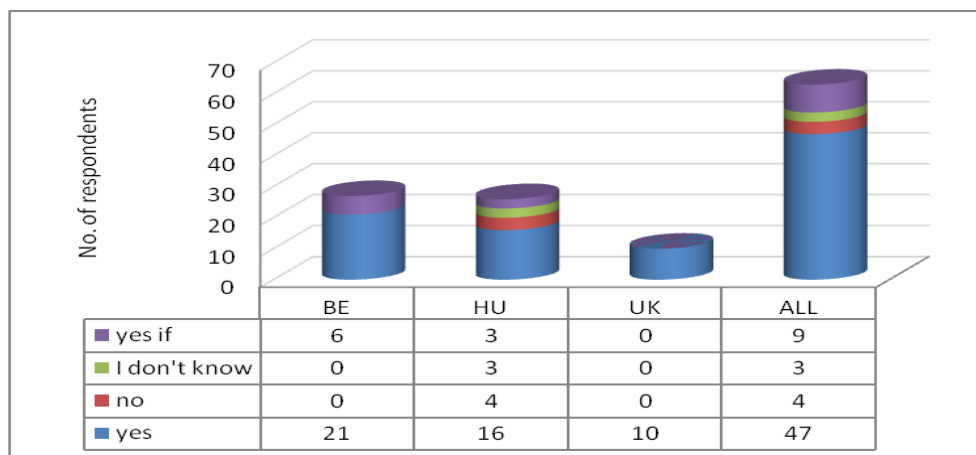


Willingness of staff members to participate in a short training session prior to the actual introduction of the eSBIRTes tool

During the project planning period the project team assumed that before installing the equipment and actually starting to identify those clients who might benefit from this additional service, a short training session should be carried out. This way, staff members closely involved in the project activities could be better informed. In order to decide on the content of this training session, staff members were asked how they felt

about this opportunity through a questionnaire. The figure below shows the results in this regard.

Figure 9: Willingness of the staff members to participate in the preparatory short training session prior to the actual introduction of the eSBIRTes tool (number of respondents)



The great majority of respondents agreed to participate in such a training session. Very few of them, mostly Hungarians, rejected the opportunity. In some cases the respondents said that some conditions should be met to ensure their participation. However, respondents did not elaborate on these conditions.

4.1.2.5. Conclusions – Recommendations for the training session

During the needs assessment period, questionnaires were administered to the staff members and head doctors of the chosen emergency departments in Belgium, UK, and Hungary. 63 questionnaires were completed (10 in the UK, 26 in Hungary and 27 in Belgium) from 6 EDs. The responses indicated that there were some positive expectations with regards to the planned development. At the same time, respondents saw quite a large number of obstacles and problems. The available time, the available staff and their competencies were perceived to be most problematic. These problems were identified in the context of routine daily functioning, not only in view of the new developments. Another general feature which was highlighted in the responses was the uncertainty of the staff members related to the new service component, the feasibility of the project implementation.

According to these results, both the competency and the uncertainty issues have been addressed during the training sessions provided for the staff prior to the pilot implementation of eSBIRTes. Another important issue which was mentioned related to the perceived motivation of the clients. This issue has also been made part of the training session; the staff members were given some additional information on how to motivate clients, and emphasis was placed on skills and competencies required to successfully motivate clients.

There were also some differences in opinion between the countries in the perception of their current situation and on feasibility of the actual implementation. The Belgian ED staff members demonstrated more experience regarding this type of intervention. Still, they rather complained because of the shortage of time during a normal shift and the

critical amount of workload. These factors made them less enthusiastic, though they thought that the implementation under the proposed circumstances would be feasible. The Hungarian staff members, on the other hand, had no previous experience regarding this type of intervention. They thought that the pilot implementation would require a lot of extra effort, and that the biggest problem would be the low motivation of the clientele. They also thought that an ED might not be the most appropriate setting for this type of initiative, and they expressed concerns about their competencies regarding the execution of the intervention. In case of the UK, where the actual implementation did not take place due to unforeseen complications concerning the ethical approval, staff members were very well informed about screening and brief intervention techniques. Though they seemed to be very much overwhelmed, they were enthusiastic about the pilot intervention.

The needs assessment suggested that national project teams should pay attention to these differences whilst consulting their colleagues.

4.2. Information Sessions

The training material designed for the information sessions was based on the suggestions stemming from the needs assessment report. The session also aimed to introduce the IT tools (ASSIST, DASH).

Information sessions were held in all implementation settings prior to the actual implementation, with the aim of developing knowledge related to:

- relevance of screening methods (self screening)
- referral systems
- poly drug use
- new psychoactive substances (clinical symptoms, testing procedures)

The theme and exact content of the training sessions was developed by the Hungarian team in cooperation with all partners. The standard content of the training session is available in Dutch, Hungarian and English in the form of PowerPoint Presentations.

The specific objectives of the training sessions were as follows:

- a) The training session contributes to the development and reinforcing of skills and competencies in
 - identifying the appropriate clientele for inclusion into the programme (target group)
 - motivating clients to make use of the computer based screening facility and self help module
 - improving the IT skills of the staff members directly working with clients belonging to the target group
- b) During the training session the participants became familiar with
 - the main objectives of the eSBIRTes project,
 - the methodology to help the clients in doing the self assessment
 - the possible institutions which might be appropriate for sending the clients further (just in Hungary)
 - the use of the referral guide
 - the techniques to motivate the clients for participation in the process (just in Hungary)

During the information session we tried to emphasize that, for the ED-staff, the actual implementation would only entail the invitation of the client to fill in the web-based screening questionnaire, accompanied by a few motivating words to improve the clients' willingness to participate.

In the UK there were no training sessions, since the UK partner was unable to obtain ethical approval from the appropriate authorities within the required time frame for the implementation of the project.

4.2.1. Implementation of information sessions

Hungary:

- 2 hospitals: Péterfy Sándor Utcai Kh., Budapest + Kaposi Mór Oktató Kh., Kaposvár

Information sessions were held on two occasions in *Budapest*:

- 1st occasion - Medical doctors working at the ED
- 2nd occasion - Nurses and other personnel working at the ED

In *Kaposvár* :

Information sessions were held 5 times in 48 hours to cover all the possible staff members. The information sessions were adjusted to their shifts.

General remarks:

- Seemingly enthusiastic and interested attitude
- Concerns raised: not enough clients, real drug users are rare, the age group was not properly defined, party goers are younger than 18; they are busy with „normal clients”;
- Though the head doctor seemingly honestly supported the whole intervention, he did not give any instructions to the staff members when the pilot phase actually started. As a result of this no clients were involved in the screening during the first ten days.

Belgium:

- 2 hospitals: AZ St-Maarten, Duffel + AZ Groeninge Kortrijk

In *Duffel*:

Information sessions for nurses were held on two occasions (15th May and 26th June), each session lasted 3 hours. This hospital has a very limited staff.

In *Kortrijk*:

Four information sessions for nurses and other staff were held in two days (1st and 5th of June), each session lasted 3 hours.

General remarks:

- The training sessions were planned in the beginning of the year, however there were some timing issues on the launch of the platform. This created some problems because the staff was trained weeks before the start of the testing period.

- In the beginning of the training some of the staff members were concerned about the tablet. They had never worked with one themselves and thought this would be difficult for clients. After the training these concerns proved to be irrelevant.
- Both head nurses were strongly in favour of the intervention and they made sure that staff were reminded about the intervention. This clinical leadership seems necessary to implement this kind of interventions.

4.2.2. Boosting and impeding factors concerning the implementation:

The general impressions during and after the information sessions in Hungary suggested that the participants were not very enthusiastic. They rather expressed uncertainty and critical attitudes towards the running of the pilot phase. At this point it became clear that some extra incentive could have improved the motivation and/or involvement of the staff. The situation was made especially difficult as substantial re-organisation was underway from the 1st of July in the Hungarian health care and administration system. These circumstances were not known during the planning period of the project. Some of the concrete remarks can be seen as follows: “no time for the task; the equipment will be stolen; it cannot be done if there is no extra help from the university - extra staff should be hired; why here, why not at primary care setting; why this particular target group instead of...”.

As a result of these attitudes of the staff finally ELTE found helpers, who regularly visited the unit and tried to find the clients who met the eligibility criteria for screening.

It is important to note that staff at the two Belgian hospitals had, at the point of pre-training for the eSBIRTes intervention, already taken part in an alcohol-based brief intervention in their EDs, for which they had received three hours of training. This alcohol intervention used a paper and pencil approach with which participating staff had experienced some significant difficulties. In particular, staff reported finding it difficult to conduct the intervention alongside their normal demanding workloads and often found the scoring system for the screening tool problematic to use. When evaluating the alcohol intervention, only 1 in 3 staff members felt that the intervention should be implemented in the future, with staff generally reporting that this type of intervention should be carried out by non-ED staff. Belgian staff were therefore thought to be entering into the eSBIRTes intervention with existing expectations about (a) the content and breadth of the staff training programme, and (b) the potential benefits or improvements to be gained from conducting the screening with the use of an iPad, and (c) the role of ED staff in substance use intervention programmes. Although acceptability was low for staff in this previous intervention, acceptability for clients was high.

In Duffel, staff felt that the time period between receiving the training and the start of the intervention was much too long and that transference from the training to the actual implementation was limited as a result.

Both head nurses were convinced of the intervention and did remind staff regularly about the intervention. This clinical leadership is perceived as necessary.

4.2.3. Conclusions for the future:

A general experience was that after the information session held for the (head) doctors – thus decision makers – the internal communication at the departments could have been better in informing the nursing staff what to expect from the training session. This might have increased the willingness of the nurses to cooperate in the project.

It is also supposed that deeper involvement of the staff in the planning phase of the implementation might have helped getting a clear picture on their motives and incentives for smooth implementation. It might also have decreased negative attitudes among staff and the feeling of the nurses that a significant amount of workload suddenly fell on their shoulders.

4.2.4. Evaluation of staff training programme: methods

At the start of the training, staff was presented with a brief pencil and paper survey that assessed their baseline levels of knowledge and confidence in relation to identifying, intervening with and assisting clients suspected of drug use. Two weeks after the training (in the interval period before the intervention began), staff completed a follow-up training evaluation questionnaire. This questionnaire repeated measures of their knowledge and confidence and asked how useful, interesting, appropriate and transferable they found the training programme. On completion of the pilot intervention period (two months in the case of the Hungarian hospitals; three months for the Belgian hospitals) staff was contacted again. This time they were asked what their perceptions of the intervention was, which barriers to implementation they encountered and how suitable they considered the training, in light of their experiences during the intervention.

With some of the same items asked across all three time periods, it was requested that those coordinating the training and follow-up questionnaires in all four hospitals allocated a unique code to each participating staff member during the first session that could then be used to label their subsequent responses. This process was designed to allow changes in individuals' knowledge and confidence to be tracked over time. Unfortunately this process was not adhered to during the pilot period and as the staff that completed the questionnaire declined to answer demographic questions or to provide their email addresses, there was no other way to identify individual respondents across the three questionnaires. Consequently, instead of referring to specific changes over time following either the training or the intervention itself, results are discussed in terms of overall perceptions at each time point.

4.2.5. Evaluation of the staff training programme: results

This section summarises key findings from the evaluation of the training programme completed by hospital staff. Where staff perceptions differed between the four hospitals or between the two countries, data are considered separately or reference is made to the nature of the distinction(s). Where results are discussed collectively and no such reference is made, no noteworthy differences were found between locations.

Staff were surveyed at three time points (see methods), with the number of staff completing the surveys at each time point varying at each hospital (see Table 6). Despite a system for matching surveys across time periods having been established, in effect this

was not rigorously implemented in any hospital and consequently it is not possible to link questionnaires across the three time periods.

Table 7: Sample sizes at each time point, by hospital

		Pre-training (T1)	Post-training (T2)	Post- intervention (T3)
Belgium	Duffel	13	11	13
	Kortrijk	35	17	13
Hungary	Budapest	5	7	16
	Kaposvar	14	19	11
Total		67	54	53

Views on the training programme (T2)

After completing the training programme, participating staff were asked to reflect on various aspects of the training. Overall, staff from Hungary felt that the training programme was both useful (Fig 10) and interesting (Fig 11). Opinion was more divided among the Belgian hospital staff however, with around half of respondents disagreeing on both of these attributes. The majority of staff from the Belgian hospitals did, however, consider the training programme to have been delivered appropriately (Fig 12), an opinion that is also shared by the Hungarian staff.

Figure 10: The training programme was useful

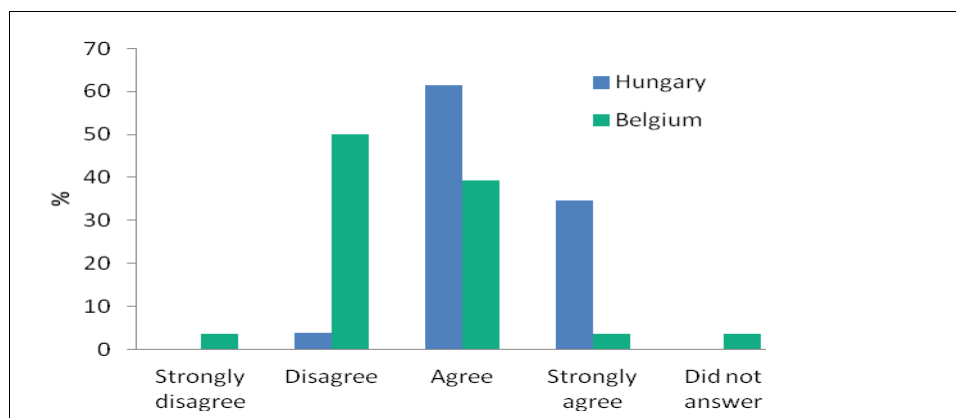


Figure 11: The training programme was interesting

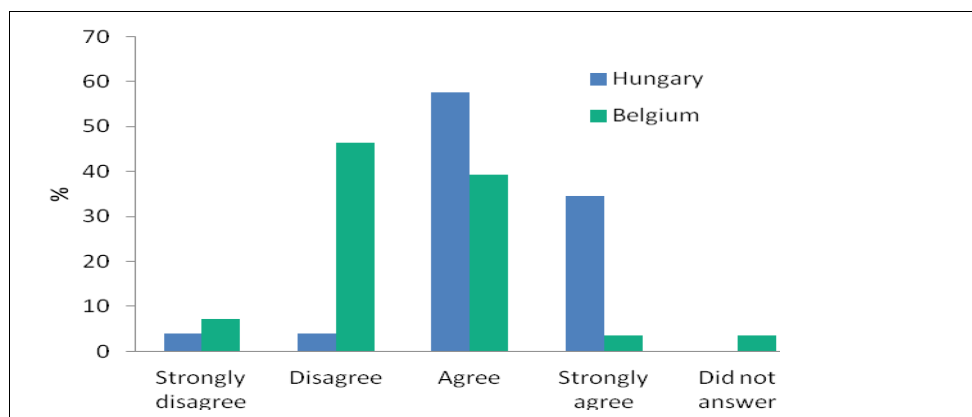
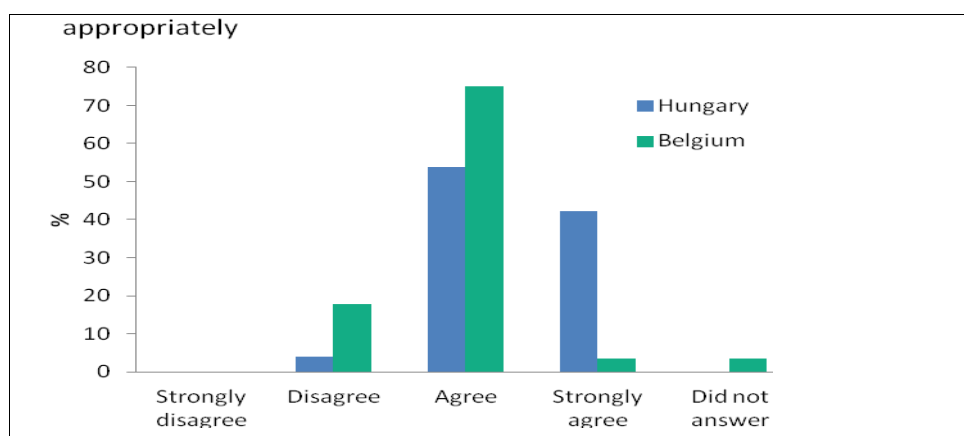


Figure 12: The training programme was delivered appropriately



When asked about the possible impacts of the training programme, the majority of staff from Hungary agreed or strongly agreed that the training had increased both their knowledge and confidence (Figs 13 and 14). The only disagreement from Hungary came from respondents from Kaposvar hospital. Opinion was again much more divided in Belgium with 46% of staff reporting no knowledge increase, and 53% reporting no increase in their confidence. Over half of the staff from Belgium said they felt that the training had not provided them with specific knowledge or skills to apply in the workplace. In contrast, 80% of respondents from Hungary felt that it had.

Figure 13: The training programme increased my knowledge

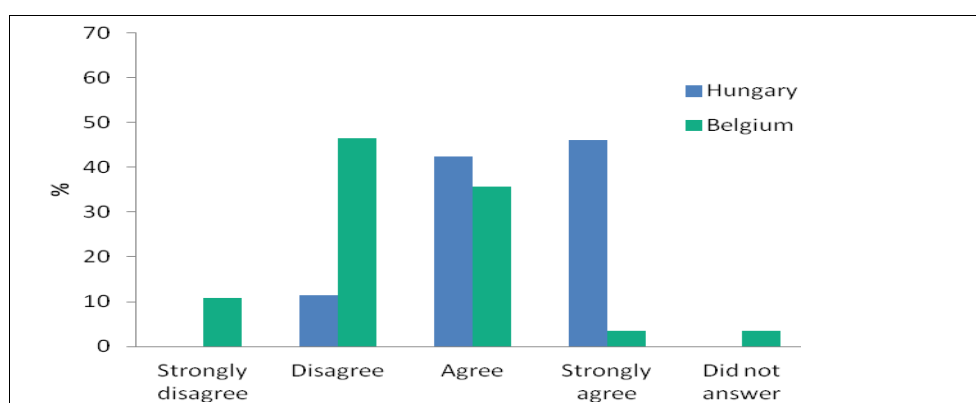
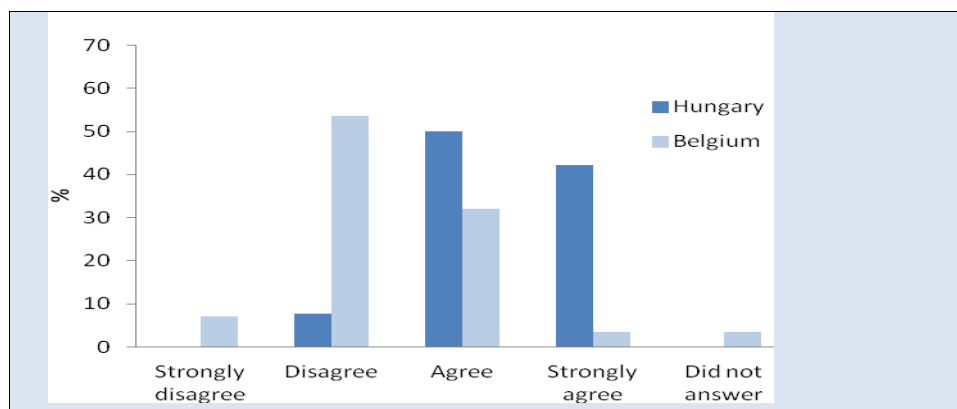


Figure 14: The training programme increased my confidence



Staff from the two Belgian hospitals provided recommendations for ways in which they felt the training programme could have been dealt with differently or could be improved. No qualitative responses were received from Hungary. Two general themes emerged in these responses addressing both the design and the implementation of the training. Participating staff felt that the training did not provide enough information on different drugs, the effects and related harms of these drugs and possible side effects etc. Whilst they felt that the training had good coverage of the technical aspects of the intervention such as using the iPad, they would have liked to have seen more time devoted to background information on the target substances to improve their knowledge of such topics. Secondly, staff felt that the time period between receiving the training and the start of the intervention was much too long and that transference from the training to the workplace was limited as a result. Although the intention was for the training to take place a few weeks prior to the start of the pilot implementation period, timing issues were encountered when developing the intervention, such that implementation did not start as early as initially intended.

As some staff reported that the training did not meet their expectations, it may be important to consider how the training and the intervention as a whole were framed or presented to hospital staff and how staff were selected for participation. Many were under the impression that the training would add something in addition to what they already knew about substance use and its associated problems and were subsequently disappointed when the programme failed to meet their expectations.

4.3. Pilot implementation

4.3.1. Obtaining ethical approvals

The pilot implementation of e-SBIRT required ethical approvals from local research committees and ethical committees of the 6 hospitals (2 in each country) in all 3 countries. After the regular processes and evaluation phases of several weeks the ethical approvals were received in Belgium and Hungary for all sites of implementation. In the UK however, the project was unable to obtain ethical approval from the appropriate authorities within the required time frame. Therefore the pilot implementation was constricted to only 4 hospitals (2 in Belgium and 2 in Hungary) instead of the originally planned 6 hospitals in 3 countries.

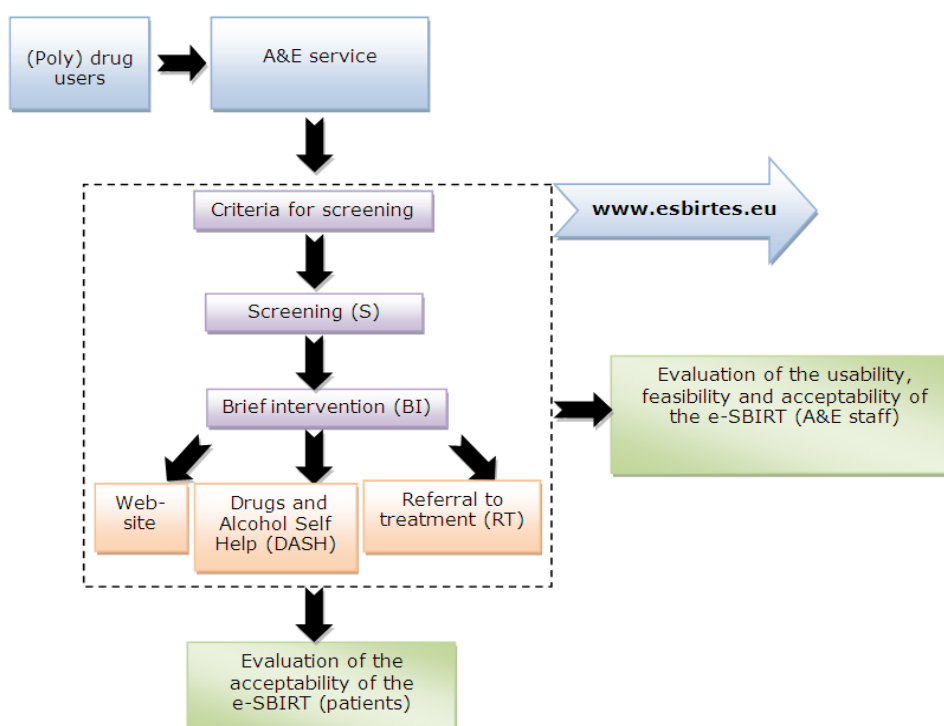
This was one of the reasons why the project partners decided to extend the – slightly modified – activity onto large music festivals both in Belgium and Hungary in order to be able to see the usability of the intervention from a different target group's point of view and also to increase the number of individuals constituting the sample (to see if the tools developed are appropriate for the target groups). The chosen youth festivals were the most convenient and popular among young people at that period of the year.

The pilot implementation also included the collection of data reflecting the views of staff members concerning specific aspects of our intervention.

4.3.2. Implementation at the EDs

The pilot implementation of the eSBIRTes at the EDs took place from July 2012 to September 2012. As mentioned above, the pilot implementation of eSBIRTes has been carried out in only two countries, Belgium and Hungary, instead of the originally planned 3. The places of implementation were 2 emergency departments in Belgium in the hospitals of AZ St-Maarten, Duffel and AZ Groeninge Kortrijk and two emergency departments in Hungary in the hospitals of Péterfy Sándor Utcai Kórház, Budapest and the Kaposi Mór Oktató Kórház, Kaposvár.

As far as the choice of the Hungarian hospitals is concerned: these hospitals had a real emergency unit where drug related cases were supposed to appear on a regular basis. The actual turnover of the clients was slightly different from the preliminary expectations, as in Kaposvár fewer individuals appeared partly due to the reorganisation procedures (see above) and also because of the summer during which all young people visited the nearby lake Balaton. Contrary to our expectations, even when these youngsters were in trouble because of their drug use, they did not appear in the Kaposvár ED, but received first aid on the spot (closer to the lake).



On the diagram above the general process of eSBIRT at the emergency departments is presented. The blue boxes represent the target group and settings, the purple and orange boxes show the actual eSBIRT, while the green ones represent the evaluation activity carried out during the pilot implementation.

In *Belgium* the implementation period lasted for 3 months: June 29th – September 30th. The program was implemented in 2 hospitals: AZ St-Maarten, Duffel and AZ Groeninge Kortrijk. In *Hungary* the implementation period lasted for 2 months: July 1st – September 10th. eSBIRTes was implemented in two emergency departments in Hungary in the hospitals of *Péterfy Sándor Utcai Kórház*, Budapest and the *Kaposi Mór Oktató Kórház*, Kaposvár.

4.3.3. Implementation at festivals

In Hungary eSBIRTes was implemented at Hungary's biggest summer music festival called Sziget Festival, lasting for 7 days (380 000 visitors, 6-13 August). The implementation took place at the first aid tent where medicals, paramedics and psychologists were working.

Four information sessions were held for the team of psychologists to cover all the possible staff members. The information sessions were adjusted to their shifts. Handouts were circulated and a laptop and internet connection was also provided.

The eSBIRT was implemented in the first aid tent with the help of a colleague from ELTE and psychologist volunteers of the first aid tent.

Although the staff was seemingly helpful and enthusiastic and strongly agreed with the relevance of such an intervention, the volunteer psychologists showed no real compliance during the implementation phase.

They even volunteered for screening in foreign languages, thus handouts were circulated providing the possibility to screen in English and Dutch, since a great proportion of visitors come from abroad.

In spite of all these efforts, only three persons became subjects of screening. The reasons for this low number seem to be similar to the EDs; low motivation of the staff (although for different reasons) and low motivation of the clients.

In Belgium eSBIRTeS was implemented at 3 dance events during the summer of 2012. The first event to implement was Tomorrowland (27-29/07), a huge dance event with 15 stages and 60.000 guests each day. Tomorrowland 2012 was selected the best dance event in the world. That means it is known around the globe and thus attracts many foreign visitors. The Qontinent (10-12/08) is the biggest hard dance event in Belgium hosting 15.000 hard house fans over two days. Supersonic (8-9/09) is a mainstream dance event for 17.000 people.

Unlike the Hungarian team that completed full screenings on the festival site, the Belgian team chose not to screen onsite. Instead, they allocated wristbands to all eligible visitors of the first aid stand at the events. The benefit of this method was that they could target more visitors. However, the downside was that they did not collect all the data (age, sex, complaints) for these visitors.

During Tomorrowland, a team of 9 volunteers (3/day) worked from 1 PM until 1 AM in the main first aid station of the event. In total there were five first aid tents on Tomorrowland, but we only had the capacity to work in one. All eligible clients passing through the main first aid tent were given a wristband that invited them to log on and complete the screening at home. They also received a small flyer explaining the aims and the importance of the project. All together, 72 people were targeted during Tomorrowland. This number was much lower than expected. There are different reasons for this: as mentioned above a lot of visitors are from foreign origins and we were only targeting Flemish festival goers. Moreover, this particular first aid tent was in the backstage of the festival, which meant that the visitors of this tent consisted mainly of the crew working on the event. Naturally the crew is sober and thus not eligible for our intervention. During the day the amount of substance related incidents at the event was rather low. During the night, at the first aid tent of the camping, the numbers of intoxicated clients was much higher, but it was impossible for our team to work during the night. And even the Flemish cross was not able to allocate the wristbands because they were too busy.

After our intervention at Tomorrowland, the coordinator of the Flemish cross suggested that he would motivate his team to allocate some of the wristbands to clients in other festivals that summer. That was an excellent opportunity to target more clients without extra effort from the VAD team. On The Qontinent this worked out quite well with +/-50 visitors given wristbands. During Supersonic, however, the medical team noticed a very low motivation rate of the clients. Many of them were not amused to cooperate in this intervention. After they allocated less than 20 wristbands to the clients, the medical team decided to stop the eSBIRTeS implementation because of too many negative reactions from the clients.

To summarize, eSBIRTeS was implemented at three dance events in Belgium, using wristbands. Altogether 140 festival goers accepted the wristband. The medical team from the Flemish cross was very interested in the intervention and was even motivated to disseminate the wristbands without the support from the VAD team (second and third event).

4.3.3.1. Collecting feedback on the implementation – Methods

Evaluation of the eSBIRTes pilot intervention relies on two basic sources.

- The staff of the emergency departments was asked to fill in questionnaires and answer open questions several times during implementation:
 - baseline questionnaire before information session
 - questionnaire on the information session, before implementation
 - questionnaire after implementation
- Clients who completed the screening tool were tracked
 - by the online screening tool by means of Google Analytics and the databases stored
 - and online questionnaires sent out to their email address eight weeks after the completion of the ASSIST

The registered users were also asked their perception of the DASH by means of an online questionnaire.

Feedback on the implementation was collected in various ways in order to get a clearer picture on the experiences of ED staff and clients with the eSBIRTes.

Questionnaires for the staff have been applied before and after the information sessions and also after the implementation of the intervention. A few obstacles however make the results of these questionnaires uncertain: ED staff were in fact not directly participating in the implementation and/or were unwilling to give their email addresses. This caused complications in linking the pre and post questionnaires. Even the non participating staff members had the feeling that the project was a burden; they had the illusion that they participated. The attitude of the staff is reflected by the fact that more attempts were needed to collect the completed questionnaires. The clients participating in the screening also received an email with a link to an online questionnaire; however the response rate was not very high. The online activity of clients was tracked by IT tools.

4.3.3.2. Conclusions of the pilot implementation

- the ED staff members were not properly motivated, they did not see the relevance and the meaning of early screening and brief intervention at the emergency department.
- The information sessions did not give them enough further motivation to make use of the instrument.
- The situation in Hungary was even more complicated as some substantial reorganisations of the health services were taking place from the 1st of July.
- Kaposvár was not the best venue especially not in this period of the year – the town was empty as most of the young people were at the lake (Balaton). There was a locally operated emergency unit (not an emergency department of the local hospital) in Siófok, near the lake, where first aid was provided, which is why very few emergency cases were taken to Kaposvár.
- Hungarian staff viewed the training more positively (useful and interesting). Belgian staff may have 'seemed' enthusiastic, but more than half felt that the training did not

provide them with specific knowledge and skills, many said the intervention was difficult to carry out.

- The intervention did not fully convince the clients they would benefit from joining the programme. A common excuse for refusing participation was not having an email address.
- Privacy issues also came up due to the fact that clients had to provide their email addresses before the screening took place, which was considered to be information too personal to share.
- Interference of previous projects in Belgium: expectations of staff were not totally met.
- Although the possible benefits of the eSBIRTes project were clear, staff members had a critical view on the intervention to begin with because of the fact they still did not see it as their role to intervene in substance problems.

4.4. Evaluation of the eSBIRTes intervention

Data for evaluating the intervention were provided from multiple sources. Information provided by the hospitals was used to estimate levels of implementation, based on how many clients meeting the eligibility criteria the hospital would typically see over the course of the intervention period, and the number of clients that were approached and asked to take part in the intervention (i.e. complete the online screening tool). Reasons for non-referral were recorded by staff through clients who were unwilling or unable to complete the screening in hospital being given a wristband with a link that would allow completion of the screening at a later point in time (i.e. from a home computer with internet access).

To examine client compliance with the intervention, data recorded by the online screening tool were analysed to examine: (i) how many respondents completed the screening questionnaire; (ii) how many of these individuals received a referral to the online Self Help Module (SHM) or a suitable local agency or service; and (iii) how many of those individuals receiving either referral followed-up on the referral/utilised the resource.

A follow-up questionnaire was sent out to all those clients who completed the screening tool eight weeks after their attendance in the emergency department. This questionnaire was designed to assess user's perceptions of the screening and intervention tools. As only six responses were received as a result of this initial request, a further email was sent out to participants in December. This resulted in an additional five responses. These responses are summarised in section 4.4.1 below. Due to the very low response rate, this section should not be taken as a reliable representation of all users' attitudes, but instead provides a preliminary indication of how the screening tool and SHM/referral guide could be perceived by some users.

4.4.1. Findings

Evaluation of the eSBIRTes intervention

This section presents the key findings from data collected during implementation of the eSBIRTes intervention in the four hospitals and at the four festivals. There are several limitations to the data that are highlighted throughout and discussed in section 4.

Number of participants

Table 1 provides a preliminary indication of the rate at which eligible clients were approached and invited to participate in the intervention in each hospital. There are some concerns as to the accuracy of both the estimated and actual data provided by the hospitals; in particular, only 51 eligible clients were estimated to have attended Kaposvar hospital over the 62-day intervention period, compared with an earlier estimate of 120-130 clients per day overall in the department. It has been suggested, however, that this earlier estimate does not apply to the summer months in which the intervention actually took place as this is a time when many local residents leave the area to stay at resorts surrounding nearby Lake Balaton. A further limitation was the inability to identify from collected data whether any clients who declined to participate in the online screening at the hospital also then declined to take a wristband (see below). Thus, the consent rates in Table 1 must be treated with caution.

Taking these limitations into account, the proportion of attendees who were known to have consented to the screening tool varied considerably across three of the locations. Whilst approximately one in six ED attendees in Kortrijk and Kaposvar agreed to take part in the intervention, in both Duffel and Budapest less than 5% of people underwent the screening.

Wristbands

Attendees who were approached in the EDs and were either unwilling or unable to complete the ASSIST screening instrument on the iPad were given a wristband. Figure 1 indicates the most common reasons recorded for wristband allocation across the four hospital locations. Basic demographic data collected when recording the allocation of hospital wristbands suggest that 36 (78.3%) were given to male attendees. Users with wristbands ranged in age from 21-45, with a mean age of 30.7 years. Belgian festival wristbands were allocated without the use of the iPad so data on gender, age and complaints/symptoms are missing for these participants. All three participants given a wristband at the Hungarian festival were male.

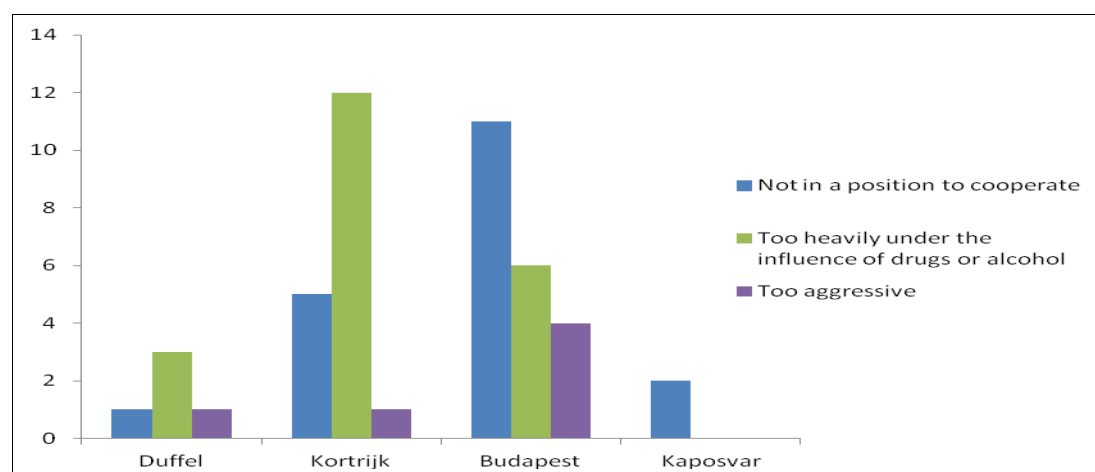
ASSIST data from individuals who were given a wristband and encouraged to complete the screening at home were not recorded within the database alongside other ASSIST scores (from those who completed the screening instrument in the ED departments or at the Hungarian festival) as desired. It was therefore not possible to explore the substance use of these "at-home completers". Although tracking unique wristband codes in Google Analytics software allowed the identification of five individuals who logged into the eSBIRTes online using the codes provided on their wristbands, only four of these users visited more than 10 pages and remained on the site for what can be assumed to be long enough to complete the screening questions. All of these users were from Belgium.

Table 8: Hospital attendees and recruitment to the eSBIRTes intervention

Hospital / Event	Number of eligible hospital attendees*	Number of attendees screened	% screened	Number of wristbands allocated
Duffel	979	39	4.0	7
Kortrijk	1,085	174	16.0	30
Budapest	535	12	2.2	32
Kaposvar	51	8	15.7	1
Sub Total	2,650	233	8.8	70
Belgian festivals	-	-	-	140
Hungarian festival	-	3	-	3
Total		236		213

* Predicted number of eligible hospital attendees based on estimated number of eligible daily attendances (hospital data) multiplied by 92-day intervention period in Belgium. Hospital data for actual number of attendees provided by Hungarian hospitals (over 62-day intervention period)

Figure 15: Reasons for wristband allocation (freq) shown for each hospital



Hospital ASSIST Data

The online screening tool consisted of demographic and health condition information (age, gender, hospital code, symptoms and/or complaints) recorded by hospital staff, and self-completed substance use data collected using the ASSIST screening tool.

Of these 236 attendees screened at the hospitals, 142 (60.2%) were male, and 94 (39.8%) were female. Clients were aged between 19 and 45 years, with a mean age of 29 years. Complete ASSIST data was provided by 187 participants. Table 2 below provides demographic information for the sample as a whole and a summary of those who completed the screening by answering all relevant questions in the ASSIST. It is important to note here that it was not possible to distinguish between those individuals who completed the screening tool but indicated they had never used any of the target substances, and those who were introduced to, but did not complete, the screening tool.

Table 9: Percentage completing the screening tool, by gender and age

		N	% completing
Gender	Male	142	80.3
	Female	94	77.7
Age	18-20	45	88.9
	21-25	60	85.0
	26-30	49	77.6
	31-35	38	76.3
	36-40	27	63.0
	41-45	17	70.6

Information from Table 2 may help to refine the selection/eligibility criteria for the intervention by highlighting those individuals who are most likely to agree to take part in the screening. Although there is no effect of gender ($\chi^2=0.236$, $p=.627$), data suggest that the tool may be best targeted at attendees aged between 18 and 25 years as over 85% of individuals in this age range who were introduced to the screening tool went on to answer all ASSIST questions. Rates of completion drop in the 36-40 years age category.

Drug use and levels of risk within the ASSIST

In the screening tool, scores on different items of the ASSIST are combined to indicate an individual's level of risk for experiencing substance-related harms (see table 10). Table 3 shows the percentage of respondents who report current usage of each substance (have used within the last three months); the percentage that have ever used, and the percentage of respondents scoring at each level of risk for these substances (N=187). Some questions used to measure risk in the ASSIST are based on lifetime substance-use rather than current substance use. Consequently, the percentages of participants with different levels of risk for individual substances total the percentage that have ever used, rather than the percentage that currently use.

Table 10: Drug use and risk levels in those completing the screening tool

Substance	Currently using		Have ever used		Level of risk					
	Freq	%	Freq	%	Low		Moderate		High	
					Freq	%	Freq	%	Freq	%
Tobacco	101	54.0	142	75.9	34	18.2	103	55.1	5	2.7
Alcohol	164	87.7	173	92.5	129	69.0	37	19.8	7	3.7
Cannabis	46	24.6	79	42.2	52	27.8	23	12.3	4	2.1
Cocaine	11	5.9	27	14.4	17	9.1	9	4.8	1	0.5
Amphetamine	13	6.9	28	15.0	16	8.6	11	5.9	1	0.5
Inhalant	6	3.2	14	7.5	7	3.7	6	3.2	1	0.5
Sedatives	30	16.0	42	22.5	18	9.6	20	10.7	4	2.1
Hallucinogens	5	2.7	16	8.6	12	6.4	3	1.6	1	0.5
Opioids	4	2.1	7	3.7	3	1.6	3	1.6	1	0.5
GHB	3	1.6	7	3.7	5	2.7	2	1.1	0	0.0

As expected, alcohol was the most commonly used substance among participants, with a large proportion of respondents indicating that they currently use alcohol. Although 19.8% of those screened were at moderate risk of experiencing alcohol-related harms (e.g. premature ageing, digestive problems, anxiety and depression, etc), over two thirds of respondents (69.0%) had a low risk of experiencing such harms. Over half of respondents currently used tobacco and over half were screened to be at moderate risk

of experiencing harms related to use of tobacco. Although levels of current use of GHB, opioids, hallucinogens and inhalants were relatively low, around one in six respondents (16.0%) reported having used sedatives in the past three months. Interestingly, far from being a problem in the older generation, 40% of sedative users fell within the 21-25 age group, with 3 out of the 4 high-risk users in the 18-20 age bracket.

Of the 187 attendees completing the screening tool, 119 (63.6%) were given a moderate or a high risk score for at least one substance. A large proportion of these moderate or high risk users identify themselves as polydrug users, with 30.5% of all respondents receiving a moderate or high risk result for more than one substance and 6.9% for four or more substances. Table 4 below indicates the number of individuals completing the ASSIST screening instrument who reported current use of one or more of the substances targeted by this intervention.

Table 11: Frequency of polydrug users (substances targeted by the intervention)

Substance(s)	Frequency
Alcohol & cannabis	35
Alcohol & cocaine	2
Alcohol & GHB	1
Cannabis & Cocaine	2
Cannabis & GHB	0
Cocaine & GHB	0
Alcohol, cannabis & cocaine	6
Alcohol, cannabis & GHB	2
Alcohol, cocaine & GHB	0
Cannabis, cocaine & GHB	0

As indicated in the table, the vast majority of polydrug users (those using more than one of the substances targeted by the intervention) used alcohol and cannabis. Very few of those classed as polydrug users used more than one type of illegal drug targeted by the intervention. Whilst figures suggest that polydrug use is relevant in this sample, focusing specifically on alcohol, cannabis, cocaine and GHB in the eSBIRTes is not adequately accessing these patterns of use as polydrug users are commonly combining (one of) these drugs with substances such as tobacco or sedatives.

Fifty percent of participants who completed the ASSIST reported using tobacco and alcohol only. This allows us to identify the most common presentation symptoms or complaints for those people who use substances other than, or in addition to, tobacco and alcohol (referred to herein as 'drug users').

Table 12 provides a comparison of the demographic profile and cause of ED presentation (symptoms and complaints) of all those completing the screening, those individuals who were current drug users, and those who recorded at least one medium or high risk score on the ASSIST. Compared with females, a greater proportion of males that were screened were current drug users. By age, the proportion of those screened who were current drug users ranged from 48.3% of 21-25 year olds to just 23.5% of 41-45 year olds.

Table 12: Current drug use and moderate/high risk use by gender, age and reason for ED attendance

		N	% in whole sample	% that were current drug users	% that were mod/high risk users
Gender	Male	142	60.2	30.3	52.1
	Female	94	39.8	23.4	47.8
Age (years)	18-20	45	19.1	35.6	53.4
	21-25	60	25.4	30.0	55.0
	26-30	49	20.8	26.5	53.0
	31-35	38	16.0	26.3	55.3
	36-40	27	11.5	14.8	29.6
	41-45	17	7.1	23.5	41.2
Symptoms	Fall	53	22.5	20.8	56.6
	Head injury	45	19.1	26.7	53.3
	Generally unwell	41	17.4	48.8	56.1
	Traffic accident	28	11.9	25.0	35.7
	Abdominal pains	27	11.4	22.2	33.3
	Anxiety	24	10.2	58.3	70.8
	Dizziness	22	9.3	36.4	68.2
	Nausea	20	8.5	45.0	60.0
	Hyperventilation	18	7.6	44.4	61.1
	Altered consciousness	16	6.8	50.0	75.0
	Collapse	15	6.4	60.0	66.7
	Palpitations	14	5.9	64.3	64.3
	Vomiting	12	5.1	41.7	75.0
	Chest pain	12	5.1	41.7	66.7
	Repeat attendance	10	4.2	60.0	70.0
	Tachycardia	10	4.2	60.0	60.0
	Hypertension	8	3.4	62.5	62.5
	Altered body temp	8	3.4	12.5	37.5
	Cramps	6	2.5	0.0	0.0
	Sexual assault	3	1.3	0.0	33.3
	Coma	0	0.0	0.0	0.0

Symptoms

Across the whole sample, having had a fall, a head injury or generally feeling unwell were the most common symptoms or complaints. As data on the general levels of presentation of each of these symptoms/complaints across the EDs are not available (i.e. to include those clients who were not approached), it is not possible to say whether these were issues particular to those approached (and thus implicated as possible reasons for the client's identification by ED staff in the first place) or are a reflection of the reasons for ED attendance in the wider population.

However, by looking at the proportion of individuals reporting with each of these symptoms/complaints who identified themselves as current drug users or moderate to high risk users, it is possible to identify particular symptoms/complaints that could be targeted in an attempt to sample those who use a wider variety of substances and to levels that put them at the greatest risk. As indicated in Table 5, although traffic accidents and abdominal pains are the fourth and fifth most prevalent complaints in the sample as a whole, only around a quarter to a third of participants reporting these are from the two subsamples of current drug users and moderate/high risk users. Altered body temperature, cramps, sexual assault and coma are all reported at low levels across the whole sample and do not seem to be particularly relevant to the current drug user or moderate/high risk user subsamples. Conversely, around two thirds of participants with

palpitations, hypertension or who had collapsed were current drug users or moderate/high risk users. Over half of those reporting anxiety and altered consciousness also sit within one or both of these two groups. Therefore to increase the likelihood that staff will approach those clients who are most in need of the screening and intervention, the symptoms and complaints that make a person eligible could be refined to focus more on palpitations, hypertension, collapse, anxiety or altered consciousness. Data suggest that these symptoms/complaints may be particularly useful for identifying current cannabis users, with both anxiety and palpitations also commonly reported by sedatives users. Just under half of all current cocaine users reported anxiety and/or generally feeling unwell.

Clients' perceptions of the intervention

Of the 11 ED attendees who completed the screening instrument and responded to the follow-up questionnaire, nine (82.0%) indicated that they thought the ED was a suitable setting in which to ask about substance use, with eight (73.0%) reporting that they felt comfortable completing the screening in this setting. The remaining 3 (27.0%) respondents reported feeling a little uncomfortable.

On completion of the screening tool, three clients (27.0%) reported accessing the SHM and three (27.0%) the referral guide. Of the referral guide users, two individuals reported that they followed up on their suggested referral, with one 'very happy' and other 'happy' with their resultant progress in reaching substance use goals. One of the three SHM users reported that they felt the module was useful in helping them manage their substance use.

Respondents were asked to offer suggestions for improving the intervention. The one completed response suggested that the anonymity of the tools needed better explanation, with clarity and reassurance sought around the use of email addresses. The respondent suggested that the provision of an email address should be optional for participants when completing the screening.

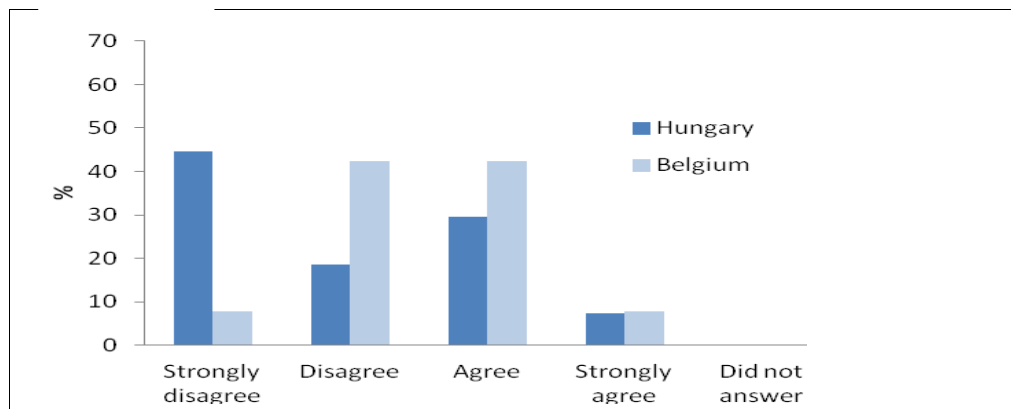
Staff Views on the intervention (T3)

Staff were asked for their views on the intervention following its completion. Although responses were received from staff in all four hospitals, it is important to note here that none of the staff from the two Hungarian hospitals actually carried out the intervention and approached or screened eligible clients. Due to issues surrounding the implementation in these locations (namely resistance from staff), the intervention was carried out by a research assistant from one of the partner organisations, with varying degrees of support from the hospital personnel. With the caveat of their non-participation in the intervention itself, responses from staff in Hungary are outlined below as they still provide an indication of how the intervention is perceived and whether or not staff feel it is appropriate in the ED setting. Interestingly, project partners in Hungary commented that the perceptions of ED staff were such that they continually referred to the intervention as if they had actually completed it themselves.

As expected based on their expressed concerns about the workload (particularly in Kaposvar hospital) and the subsequent employment of an independent researcher to conduct the intervention, a large proportion of staff from Hungary reported that the

intervention was not easy to carry out alongside their routine duties (Fig 16). Staff from Belgium were split almost exactly down the middle, with many feeling it was easy and many feeling it was difficult.

Figure 16: The intervention was easy to carry out alongside my routine duties



Many respondents from Belgium felt that it was easy to apply what they had learnt during the training programme to the workplace for the intervention (Fig. 17) and that the training prepared them well for carrying out the intervention in the ED. Only one in four staff members reported feeling ill-prepared and these were all respondents from Duffel hospital (Fig 18). This negative scoring may reflect the fact that Duffel was the first hospital to roll out the intervention and subsequently experienced certain technical difficulties during the first week of the pilot that could not have been legislated for in the training. In Hungary there was noticeably less consensus, with around a third of staff members reporting that the training was not suitable preparation for conducting the intervention.

Figure 17: It was easy to apply what I learnt in the training session to my workplace when carrying out the interventions

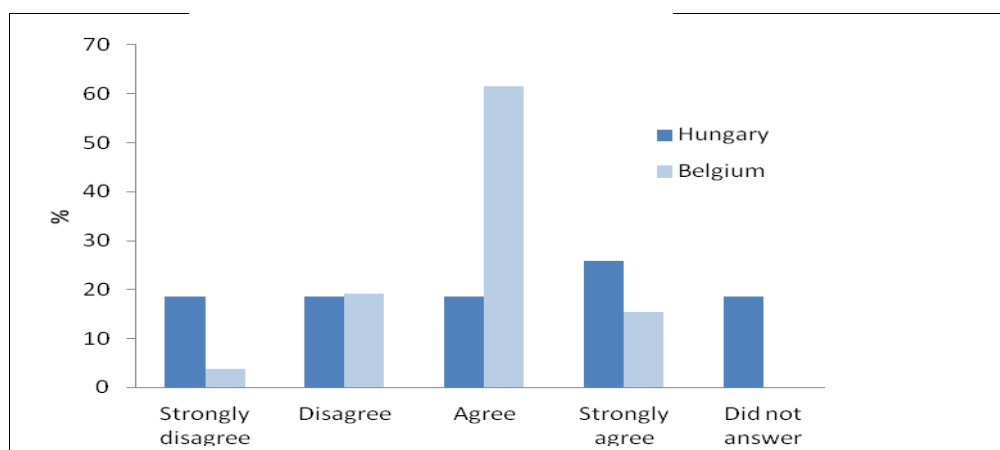
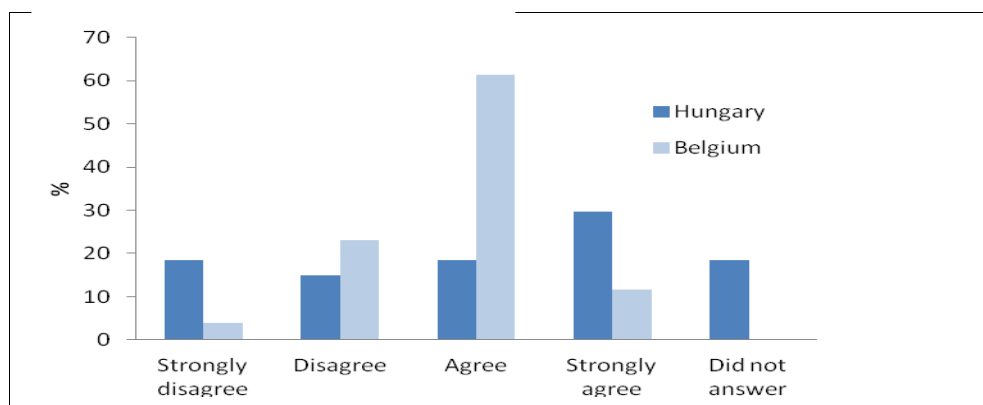


Figure 18: Having completed the training programme, I was well prepared to carry out the intervention



When asked, based on their experience of the intervention what, if anything, they felt should have been included in the training but was not, in free text respondents from Duffel hospital again echoed the idea that more information on the different drugs should have been provided in training.

Although around half of all Belgian respondents felt that clients may have benefitted from the intervention (Fig 19), staff were largely unsure as to whether the intervention was a useful service to have in the ED, with 65% of staff members disagreeing or strongly disagreeing (Fig 20). When asked to elaborate on this response, some staff reflected on client behaviour, suggesting that clients were unlikely to tell the truth when completing the screening tool and were unlikely to follow up with the intervention once they left the ED. Other responses were more self-focused, with staff suggesting that prevention is not a task for the ED and that the intervention is of no direct value to its staff.

Figure 19: Clients have benefitted from the intervention

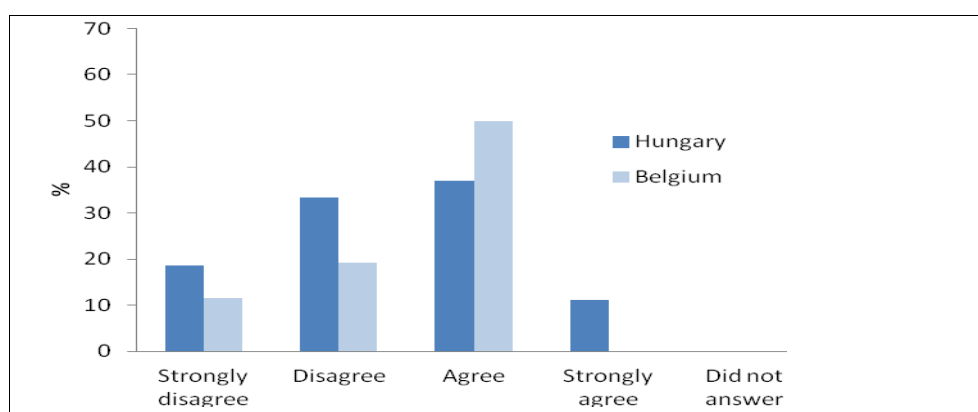
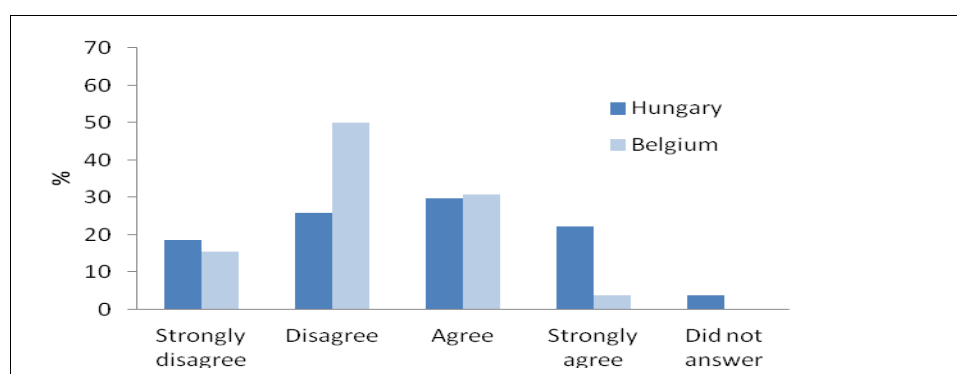


Figure 20: The intervention is a useful service to have in the ED



The usefulness of the intervention also divided opinion in Hungary, with just over half of respondents agreeing or strongly agreeing that the intervention was a useful service in the ED (Fig 20) and similar numbers suggesting that clients will have benefitted from its application (Fig 19). Those who viewed the intervention positively in Budapest felt that it may 'catch problems early' and encourage clients to seek help. No comments were received from staff in Kaposvar.

Table 13 below provides a summary of the negative and positive aspects of the intervention indicated by staff in free text comments boxes. In both cases, staff from Duffel were most willing to articulate their views.

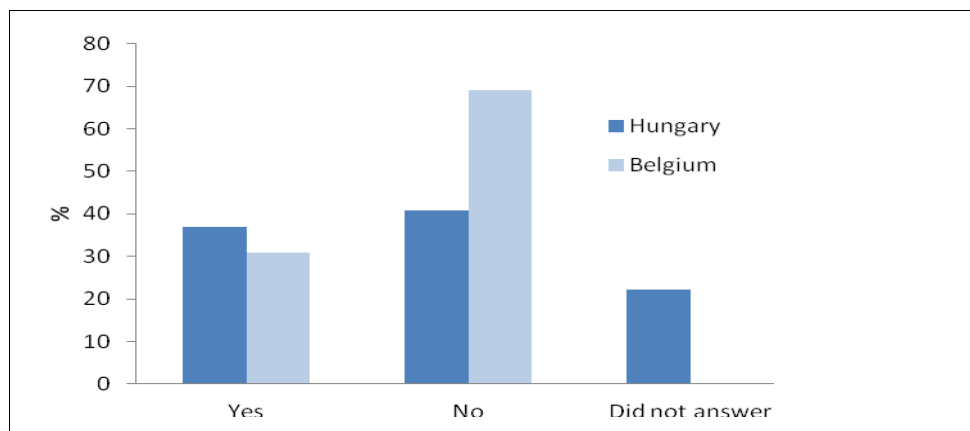
Table 13. Staff views on the intervention

Theme	Positives	Negatives
Technology	People liked working with the iPad and generally found it easy to use	Many technical issues were experienced as the iPads froze or the internet connection was lost
		Clients without an email address were unable to take part
Client attitudes and behaviour	The intervention made some clients reflect on their substance use and was a good wake-up-call for users	Many people refused to take part as they felt they were being specifically targeted
		Clients had concerns about anonymity and confidentiality and failed to see how their email address was separated from their responses
		The reactions of some clients suggested to staff that they were not convinced of the reliability of results from the ASSIST
		Staff believed that many clients were not being honest in their responses
Staff attitudes and behaviour	The intervention encourages greater communication between staff and clients	Staff do not have the time and space to carry out the intervention

When asked if they thought the ED should continue to implement the intervention in the future, seventy percent of staff from Belgium said no (Fig. 21). Respondents felt that the ED and its staff were already too stretched and should not take on additional responsibilities when clients are largely unwilling to cooperate. Approximately 1 in 5 respondents from Hungary declined to answer this particular question. Of those that did provide a response, opinion was evenly divided, although respondents from Budapest were more likely to say yes and those from Kaposvar more likely to say no. Those

thinking it should continue did so on the basis that the intervention would be able to help many more people (as indicated in qualifying comments).

Figure 21: The ED should continue to implement the intervention in the near future



Overall staff in all hospitals felt that a lack of time in their normal working day, limited human resources and a lack of private and quiet spaces in the ED in which to conduct the screening were the main barriers to implementation. Staff from Duffel hospital also suggested that having different eligibility requirements on different days was confusing for staff. Other barriers to implementation that were outlined included technical issues or defects, problems with use of the iPad in older clients, and the requirement of an email address from all those wishing to take part.

When asked what they would change if the intervention was implemented again, there was a general consensus among respondents that an intervention of this nature within the ED would require designated staff, either being implemented by hospital administrators or by external specialist project staff. As well as personnel changes, respondents from all four hospitals felt that separate private spaces needed to be set aside for talking to clients and conducting the screening. Staff also felt that they would benefit from more regular feedback on the intervention, such as updates on the number of clients who have been screened and/or the number of users who have been identified as moderate or high risk and referred to the SHM.

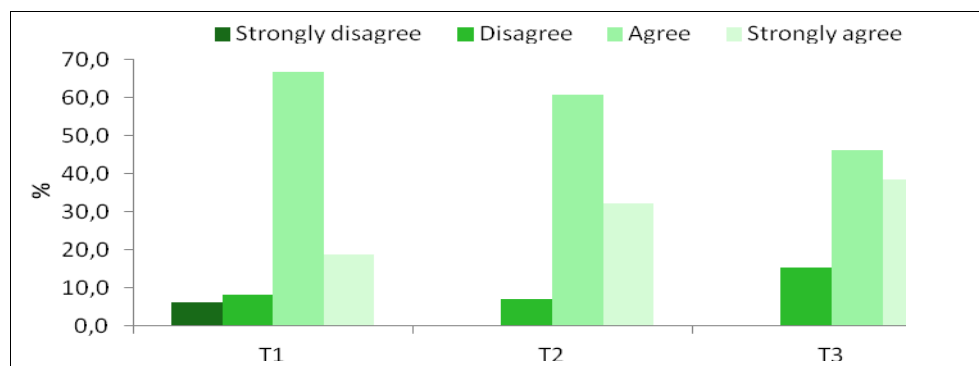
Changes in awareness and confidence (T1-T3)

To assess the impact of the training programme, staff were asked to answer the same questions about their awareness and confidence at all three time points (pre-training, post-training and post-intervention). As it is not possible to track individual responses over time and is likely that different respondents may have completed the questionnaire at each of the intervals, changes are discussed broadly in terms of overall/dominant attitudes and opinions, rather than specific changes to the knowledge, confidence or behaviour of individuals.

Although staff from the Belgian hospitals indicated that they would have liked to have seen more information about different types of drugs, drug users and the dangers of use included within the training programme, before they took part in the training the vast majority reported that they already had a good awareness of recreational drug issues. The intervention may have still had a positive impact on these individuals though as Fig

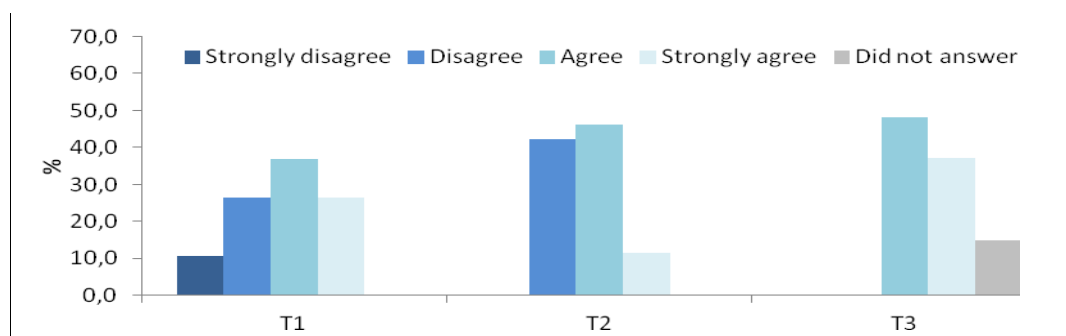
22 indicates that at T2 and T3, more respondents strongly agreed that they had a good awareness.

Figure 22: I have a good awareness of recreational drug issues - Belgium



A possible effect of the intervention on improving awareness of recreational drug issues among Hungarian ED staff is suggested by the results in Fig 23. Prior to completing the training, nearly 37% of staff felt that they did not have a good awareness of these issues. Although this disagreement increased slightly at T2, by the time the intervention had been completed all respondents reported good levels of awareness. It is not unusual to see a slight dip in how well people think that they understand or are aware of an issue following training as (the content of) the training programme will often reveal to participants that they did not know as much about the issue as they initially thought they did.

Figure 23: I have a good awareness of recreational drug issues - Hungary



Hungarian staff also reported similar changes over time in their levels of confidence in identifying clients that may be at risk of problems as a result of their substance use (Fig 24). Whilst immediately prior to training 21.1% of participating staff said they would not feel confident in identifying the most at-risk clients, by the time the intervention finished all respondents reported feeling confident in this task. This result must, of course, be considered in light of the fact that staff in Hungary did not conduct the intervention themselves and therefore did not need to put their confidence in identifying suitable clients/participants to the test. Such pronounced positive changes in confidence were not seen in the staff from Belgium who did carry out the intervention (Fig 25). Here the reported confidence of staff can be seen to drop following the training and by T3 19% of participating staff are still lacking in confidence. This suggests that these staff members

may have had some negative experiences during the intervention that may have acted to reinforce their feelings of inefficacy. This may happen if, for example, a staff member approaches a client who is then very upset or annoyed that he or she is being asked about drug use when they have never used such substances.

Figure 24: I would feel confident in identifying clients that may be at risk of alcohol and/or drug related problems – Hungary

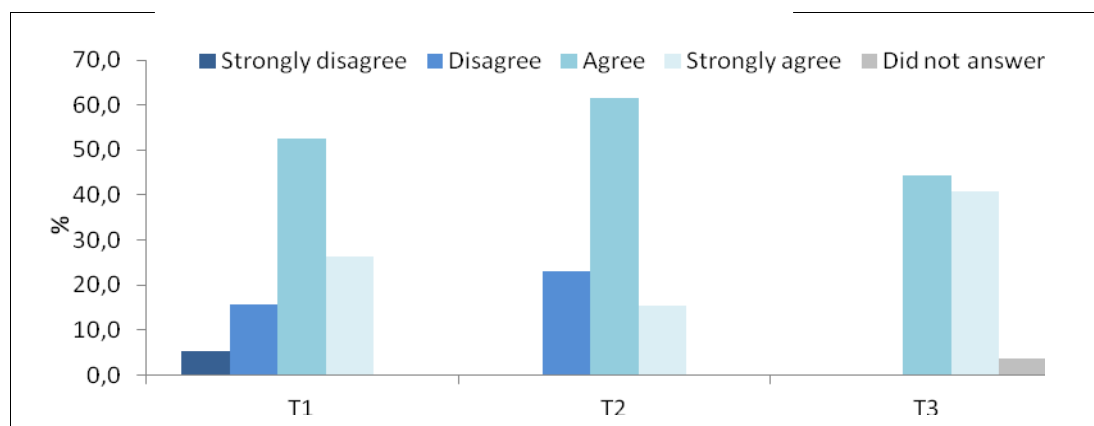
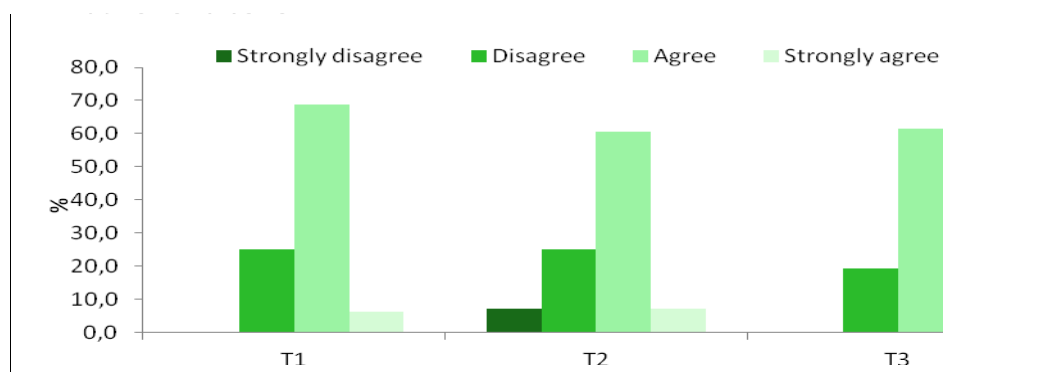


Figure 25: I would feel confident in identifying clients that may be at risk of alcohol and/or drug related problems - Belgium



For Belgian staff, this lack of confidence also extends to approaching clients and encouraging them to complete the screening tool. Although small improvements can be seen after training, by the end of the intervention 38.4% of staff still appear to be unsure of their capability for approaching and engaging client participants (Fig 26). The situation for Hungarian staff is slightly better with only 29.6% of staff reporting a lack of confidence by T3 (Fig 27).

Figure 26: I would feel confident approaching these clients and encouraging them to complete a screening tool - Belgium

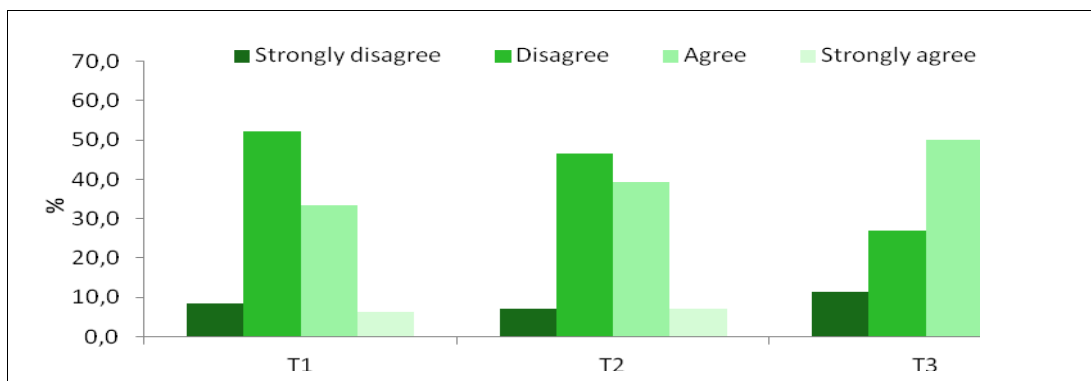
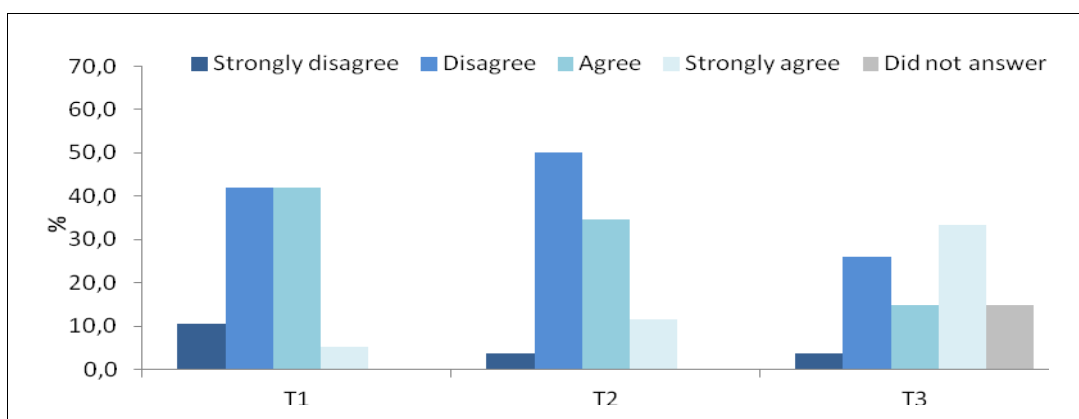


Figure 27: I would feel confident approaching these clients and encouraging them to complete a screening tool - Hungary



When looking at staff dealing with clients' questions or queries relating to substance use, very little change over time is seen in Belgian ED staff, with just under half of respondents reporting that they would feel confident in supporting clients in this way (Fig 28). As there is very little difference in the responses gained at T2 and T3, it is perhaps the case that this situation (with clients seeking answers to specific questions) did not arise during the intervention at a suitable frequency to allow staff to 'test' their confidence or utilise skills they may have gained from the training programme. Similarly in the Hungarian sample there appears to be no direct or immediate effect of the training. Although there are lower levels of disagreement at T3, this is accompanied by an increase in the number of participants failing to answer that particular item, rather than any real increase in agreement/confidence (Fig 29).

Figure 28: I would feel confident supporting clients with any questions or queries relating to alcohol or drug use - Belgium

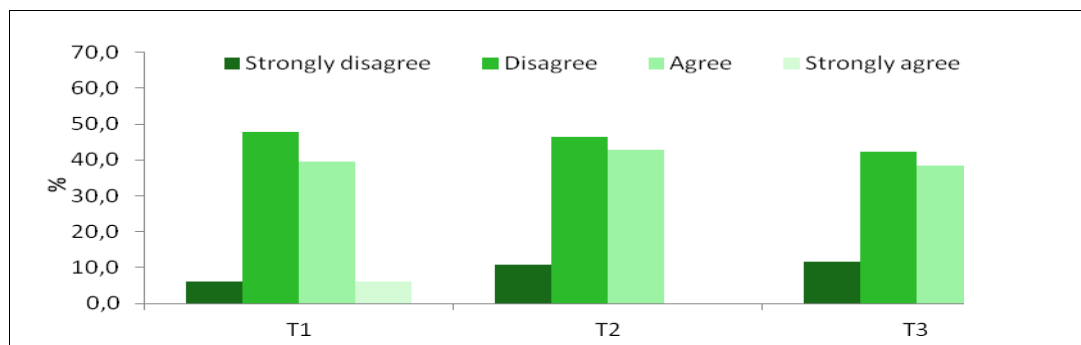
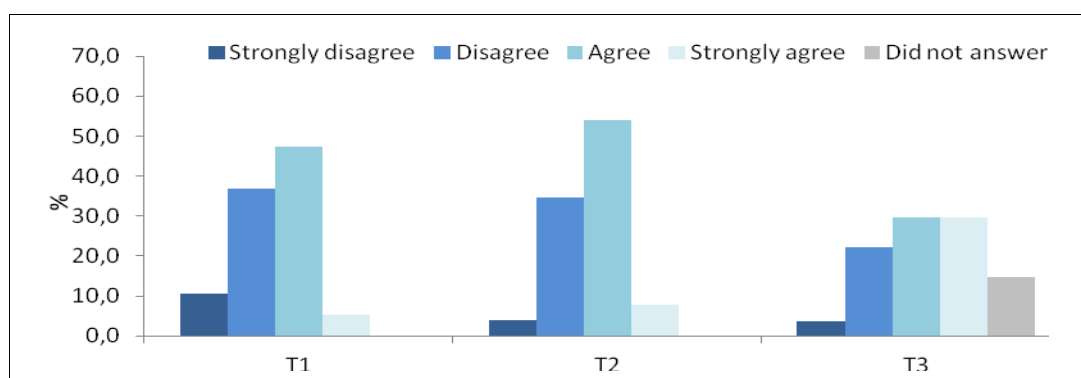
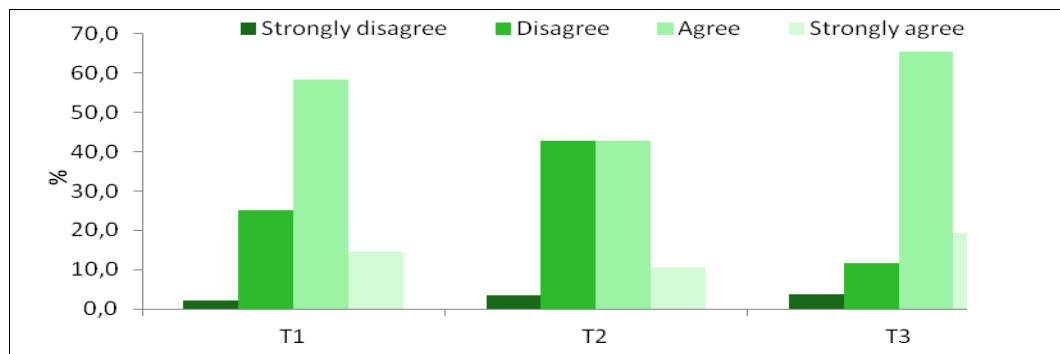


Figure 29: I would feel confident supporting clients with any questions or queries relating to alcohol or drug use - Hungary



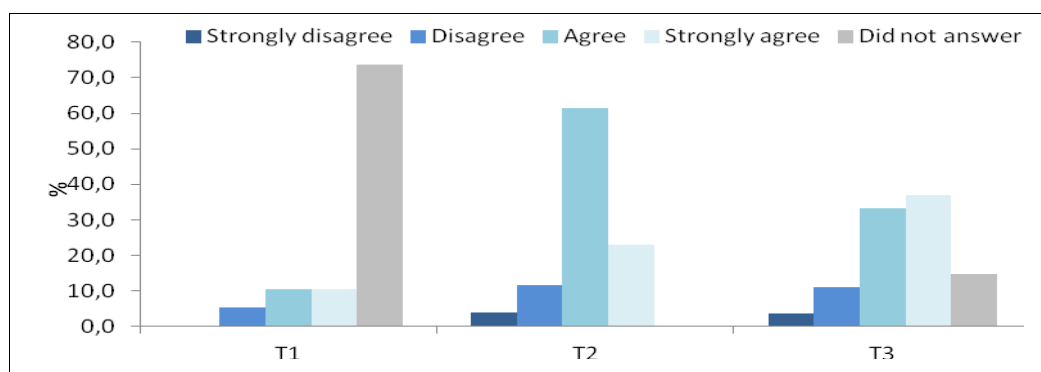
Finally participants were asked if they thought it was important for ED staff to identify and approach clients that may need help with alcohol and/or drug issues. Before the training programme about one in four respondents from Belgium thought not, with 46.5% feeling it was not important even once they had completed the training (Fig 30). After the intervention however, 84.6% of respondents agreed that identifying and approaching such clients was important. This seems to be a very positive result in terms of the ongoing impacts of the intervention, however, when taken in light of participants' other responses and reflections on the intervention (e.g. 70% suggesting that the intervention should not be implemented in future), it suggests that whilst staff felt that it is important that something is done, they do not seem to agree that it should be via this intervention in its current form. It may also be the case that individuals do not see it as part of their role in the ED, suggesting instead that personnel such as specialist alcohol or substance use nurses may be better placed to carry out the intervention.

Figure 30: It is important for ED staff to identify and approach clients that may need help with alcohol and/or drug issues - Belgium



Hungarian responses to this item are more difficult to interpret as nearly two thirds of respondents failed to answer this question at T1. Nevertheless, if results from T2 and T3 are compared, a decrease in overall perceived importance can be seen, accompanied by a slight increase in the number of staff that strongly agreed on the importance of identifying and approaching clients (Fig 30).

Figure 31: I would feel confident supporting clients with any questions or queries relating to alcohol or drug use - Hungary



5. Strengths, limitations, recommendations and suggestions for further research

Based on scientific literature suggesting that SBIRT programmes within emergency departments can be effective in reducing risky drinking behaviours and illicit drug use among clients, the project-team managed to develop an innovative electronic SBIRT targeting polydrug users in emergency services. After a pilot implementation period of two months in four hospitals and at four music festivals, it can be concluded that the eSBIRTes program is able to identify clients at high or moderate risk of developing problems related to their alcohol or other drug use. After all, 63.6% of the ED attendees who completed the screening tool were given a moderate or a high risk score for at least one substance. A large proportion of these moderate or high risk users identify themselves as polydrug users, with 30.5% of all respondents receiving a moderate or high risk result for more than one substance. However, only few clients used the suggested brief interventions (self help or self referral to treatment) provided online. It is very likely that the type of drug users reached by this project – young polydrug users – have a limited awareness of the problems associated with substance use. Therefore ending up at the ED on a particular night out is considered as just an isolated and unrelated episode. We have to concede that recreational drug users are difficult to motivate to change their drug use, at least not in an opportunistic way as this project tried to establish.

Evaluation results from the cooperating staff suggested that even though the intervention was developed as an electronic tool and in a self administered way, the majority of the staff felt that they did not have the time or resources within their EDs to support the intervention themselves. Research in the differences between EDs in different countries and even in different continents could provide insight to why these interventions are more accepted in one hospital than in another.

Emergency wards at music festivals seem to be an interesting alternative to EDs to target recreational drug users. However, we found that drop-out with this type of clients was extremely high. Only two percent of the clients we provided with a wristband and an additional information leaflet logged in to our intervention when they got back at home.

Below, some limitations of the eSBIRTes intervention in terms of both design and implementation identified during the pilot implementation are discussed. Many issues that emerged during the development and implementation of the project were addressed in a timely manner to allow the intervention to progress as intended. For those issues that could not be addressed during the intervention, recommendations are provided for future implementation and further research.

5.1. Information flow and data collection

Despite a clear evaluation strategy based on the collation of data on client flows, compliance and screening data, in practice a number of complications were experienced that limited the capacity of the evaluation. Firstly, a lack of available data on routine client flows, client demographics and causes of attendance at participating EDs meant that it was not possible to identify the number of eligible clients that were seen at each ED over the course of the intervention, and consequently to establish implementation

levels. Despite procedures directing that all eligible clients be approached, the relatively low numbers of clients completing the screening tool, and the estimates of client numbers provided by partners, suggest that this was not the case. As ED data collection is often identified as being inconsistent between hospitals, future evaluations should seek to clarify data collection systems and introduce mechanisms for collecting routine client data prior to implementation.

Eligible clients who were unable or unwilling to participate in the project should have been given a wristband to enable them to participate in the screening later at home should they choose to. The mechanism of recording wristband allocation relied on staff inputting information into the online screening system, including reason for non-participation. It may be that this system discouraged staff from giving out wristbands and a simpler mechanism could be adopted in future.

Finally, the database behind the screening tool did not initially store data as intended. This issue has now been resolved, yet it meant that some key information was not available to researchers for the purpose of pilot evaluation. In particular, the database did not code 'never' responses for questions on substance use and consequently it was not possible to distinguish individuals who had never used substances from those who had simply not answered the question. For this evaluation we excluded cases for which no substance use data was available – considering these as non-completers. Individuals who had data on past or current use of at least one substance were considered 'never' users for any other substances where no data were included. For future implementation, it is important that all 'never' responses are coded in the ASSIST so as to distinguish between those respondents who failed to answer particular items, and those who said they had never consumed a given substance. This would allow reliable calculation of rates of (non-) completion.

As identified, ASSIST data from those individuals who used their coded wristbands to complete the screening at home were not stored within the dataset alongside the ASSIST data provided by those screened in hospital. For future implementation it would be necessary to ensure that all ASSIST scores could be extracted together, with clear identification of those that have been completed in hospital, and those that have been completed by users at home.

5.2. Appropriately targeting drug users

Targeting drug users should be one of the primary concerns when selecting hospitals to implement an intervention of this nature. It is important to obtain local information on both the overall rate of presentation for different demographic categories (e.g. gender, age), patterns of drug use among the local population (where available) and any temporal or seasonal effects, such as periods of high or low attendance due to tourism or the relocation of students (inside or outside of the academic term time) for example. This should inform decisions as to where and when to implement the intervention.

When surveyed post-intervention, ED staff from both Belgium and Hungary reported that they felt the eSBIRTes intervention was especially suited to younger people, with some older clients experiencing difficulties working with the iPad. Alongside this, there was a general feeling that the eligibility criteria were too complex and too broad, making it difficult for staff to accurately identify those individuals that should be approached for

screening. Results from section 4 provide an indication of ways in which the eligibility criteria could be refined to (a) make the implementation and screening process more manageable for the ED staff, and (b) increase the likelihood of identifying those most at risk/in need of intervention. In support of comments received from staff, results indicate that clients in the younger age categories are more likely to complete the screening than those in the older categories. The highest levels of current drug use are also seen within these younger clients (e.g. 18-25 years old). However, it may also be important not to neglect the 31-35 age group as 55.3% of these individuals, when screened, were moderate or high risk users.

As discussed in section 4, some symptoms or complaints could be removed from the eligibility criteria as they have not shown any real association with current or moderate/high risk drug users. These include altered body temperature, cramps, sexual assault and coma. Instead, focus should be on those complaints for which there is the greatest 'hit rate' among those currently using and those most at risk from their use (i.e. those complaints for which a large percentage of clients reporting said complaints are subsequently identified as current or moderate/high risk users). These include palpitations, hypertension, collapse, anxiety and altered consciousness.

A key limitation of this screening tool is that it may fail to capture the most severe cases of drug and alcohol misuse as these individuals are too heavily under the influence of substances or too aggressive to complete the intervention when presenting at the ED. It may therefore be the case that other units within the hospital that treat clients with drug-related complications may be a more appropriate setting in which to introduce the screening tool.

When evaluating hospital ASSIST data from the intervention and examining individual response patterns and levels of risk, a limitation of the ASSIST scoring system was identified. If an individual indicated that they had not used a substance in the past three months (but had at some point in their life time), they scored 0 and were able to skip to the last two screening questions which were not limited to a particular time period. These two questions asked whether or not the respondent's friends and family had ever expressed concern about their use of a particular substance, and whether or not the respondent had ever tried but failed to reduce or stop their use of a substance. If the respondent responded 'yes but not in the past three months' to both of these questions (as it had already been established that they had not taken the substance in the past 3 months) they received a score of six which translates to a moderate risk level for that given substance. When the above pattern of responding happened for alcohol, cannabis, cocaine or GHB, the respondent received a referral to the Self Help Module to manage their substance use, even though they had indicated that they are not currently using a substance and may not have done so for quite some time. For these individuals, it seems likely that the SHM may not be appropriate, and this may explain why some individuals did not engage with the SHM after receiving their referral email. This may also go some way towards explaining why staff reported that some clients did not feel that the ASSIST was reliable, or did not feel that the risk scores they were given were suitable. If the ASSIST is used in future interventions of this nature, it would be advisable to adapt the ASSIST scoring system, in a way that only those individuals who report currently using the target drugs are referred to the SHM.

Although the ASSIST's primary function is as a screening instrument to inform ongoing referral for substance users, results from the hospital ASSIST are also useful for identifying patterns of drug use among ED attendees. Results from this pilot have identified a surprising level of sedative use among ED attendees in the target hospitals, with 16% of those screened identifying as current sedatives users. This makes sedatives the 4th most widely consumed drug type (after tobacco, alcohol and cannabis), with their use more prevalent in this sample than cocaine or GHB (both substances targeted by the intervention). Of those reporting sedative use, 20 individuals were moderate risk users and four were high risk users, suggesting a need for future interventions to include sedatives as target substances. However, the relative high prevalence figures of sedatives might be due to the fact that the client did not understand the question (the ASSIST questions 'non medical use' of sedatives).

5.3. Motivating drug users

Although it is clear that screened clients receiving moderate or high risk scores for the target substances did not go on to visit or use the SHM, available data does not permit us to establish why this was the case. A further limitation of using the ASSIST as a screening instrument, however, is that it does not allow advice to be tailored to the individual. By asking additional items on completion of the screening questions, it may be possible to establish how motivated a person is to address their substance use, thus allowing ED staff (or any individual conducting the intervention with clients) to provide targeted brief motivational advice. Items such as the following may be suitable:

'How concerned are you about your substance use?'

'How motivated are you to change your substance use?'

5.4. Staff engagement

By surveying staff after the training and once they had completed the pilot intervention, it is possible to identify potential barriers to both staff motivation and involvement and to the implementation of the intervention itself. As many staff reported that the training programme was contrary to their expectations, it is important that when staff are recruited to the training they are provided with a realistic training preview, allowing the development of realistic expectations concerning the purpose of the training, its learning outcomes, how the training will be delivered and what will be required of them as participants (e.g. any additional reading material, participation in group exercises or discussions etc). The ability of project staff or the trainers to foster a suitable pre-training understanding of the aims and objectives may be enhanced by gaining some awareness of the training programmes or interventions that staff have previously taken part in (if any), how these were received and which elements staff are likely to perceive as transferable to the new programme. The importance of effective internal communication both before and during the intervention cannot be underestimated, and it may be important to ensure that participating hospitals have the organisational climate, channels and procedures to support this necessary level of communication.

Staff felt that one specific limitation of the training programme was its lack of background information on different drugs, their effects, patterns of use and typical users. As part of the eSBIRTes project, a factsheet on drugs was developed for staff but was unfortunately not made available at the time of the training. It may be important for

this sheet, and additional information such as signposting to other suitable resources, to be available to all staff participating in interventions. Generally it seemed that staff were also unable to see the value or applicability of the intervention in terms of potential impact on longer-term health service engagement and demand, and consequently on their own working lives. This may be a useful addition to the training programme, highlighting the importance and relevance of prevention or intervention efforts.

Whilst some respondents did feel that the intervention was useful to have in the ED and was of benefit to the clients, the general consensus among participating staff at all four hospitals was that the intervention should be carried out by specific dedicated personnel (suggestions included hospital administrative staff or independent researchers from the project team), in a separate assigned space that is easily accessible but quiet and private. Staff simply felt that they did not have the time or resources within their EDs to support the intervention themselves.

5.5. Future research

Although the eSBIRTeS project has seen the development of a very useful tool for current drug users who are motivated to change their patterns or levels of use (the SHM), the data presented in this report suggest that EDs may not be the most suitable setting to approach these individuals and try to motivate them to change their substance use, at least through the use of a broad screening programme. It is likely that many individuals attending the ED and classed as eligible for screening were not attending the ED due to their drug use – and consequently this does not represent the ‘teachable moment’ it may do for alcohol and known alcohol-related attendances. Whilst it may be that individuals who attend ED specifically following a health problem resulting from recreational drug use do respond to screening and brief intervention, we were unable to identify such clients within this study and the number of clients this represents may be relatively small. As existing research indicates a greater level of success for alcohol brief interventions, the possibility of including a drugs ‘bolt-on’ in such interventions should be explored.

There is therefore a pressing need for research to explore where and when drug users may be most receptive to both screening and intervention, and what the best approach is to engage with and motivate these individuals. Key factors may include the location in which the intervention is being conducted, the time of day or days of the week that are most appropriate, the timing of the intervention in relation to the user’s most recent consumption of drugs, or the type of person to which users are most likely to respond positively (e.g. someone in a position of authority or someone they can identify with and feel is more approachable).

6. REFERENCES

Academic ED SBIRT Research Collaborative. An evidence-based alcohol screening, brief intervention and referral to treatment (SBIRT) curriculum for emergency department (ED) providers improves skills and utilization. *Substance Abuse*, 2007, 28(4): 79-92.

Academic ED SBIRT Research Collaborative. The impact of screening, brief interventions and referral for treatment in emergency department patients' alcohol use: a 3-, 6- and 12-month follow up. *Alcohol and Alcoholism*, 2010, 45(6): 514-519.

Babor TF, McRee BG, Kassebaum PA, Grimaldi PL, Ahmed K, Bray J. Screening, Brief Intervention, and Referral to Treatment (SBIRT): toward a public health approach to the management of substance abuse. *Substance Abuse*, 2007, 28(3): 7-30.

Ballesteros J, Duffy JC, Querejeta I et al. Efficacy of brief interventions for hazardous drinkers in primary care: systematic review and meta-analyses. *Alcoholism: Clinical and Experimental Research*, 2004, 28:608-618

Barnard S. Implementing an SBIRT (Screening, Brief Intervention and Referral to Treatment) program in the emergency department: challenges and rewards. *Journal of Emergency Nursing*, 2009, 35: 561-3.

Bashir K, King M, Ashworth M. Controlled evaluation of brief intervention by general practitioners to reduce chronic use of benzodiazepines. *British Journal of General Practice*, 1994, 44:408-412.

Bertholet N, Daepfen JB, Weitlisbach V et al. Reduction of alcohol consumption by brief alcohol intervention in primary care: systematic review and meta-analysis. *Archives of Internal Medicine*, 2005, 165(9): 986-95.

Budney AJ, Fearer S, Walker DD, Stanger C, Thostenson J, Grabinski M & Bickel WK. An initial trial of a computerized behavioural intervention for cannabis use disorder. *Drug and Alcohol Dependence*, 2011, 115 (1-2), 74-79.

Burke PJ, O'Sullivan J, Vaughan BL. Adolescent substance use: brief interventions by emergency care providers. *Pediatr Emerg Care*. 2005 Nov; 21(11): 770-6.

Cherpitel CJ, Korcha RA, Swiatkiewicz YY et al. Screening, brief intervention and referral to treatment (SBIRT): 12 month outcomes of a randomized controlled clinical trial in a polish emergency department. *Alcoholism, Clinical and Experimental Research*, 2010, 34(11), 1922-1928.

Cunningham RM, Bernstein SL, Walton M, et al. Alcohol, tobacco, and other drugs: future directions for screening and intervention in the emergency department. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*. 2009;16(11):1078-88.

Cunningham RM, Walton M a, Goldstein A, et al. Three-month follow-up of brief computerized and therapist interventions for alcohol and violence among teens. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*. 2009;16(11):1193-207.

D'Onofrio G and Degutis L. Preventive care in the emergency department: screening and brief intervention for alcohol problems in the emergency department: a systematic review. *Academic Emergency Medicine*, 2002, 9(6): 627-638.

Deitz DK, Cook RF & Hendrickson A. Preventing prescription drug misuse: field test of the SmartRx web program. *Substance Use and Misuse*, 2011, 46(5), 678-686.

Desy PM, Perhats C. Alcohol screening, brief intervention and referral in the emergency department: an implementation study. *Journal of Emergency Nursing*, 2008, 34:11-19.

Duncan TE, Duncan SC, Beauchamp N, Wells J & Ary DV. Development and evaluation of an interactive CD-ROM refusal skills program to prevent youth substance use: "refuse to use". *Journal of Behavioral Medicine*, 2000, 23(1), 59-72.

Epstein J, Collins KK, Thomson NR, Pancella T & Pauley D. The doubles: evaluation of a substance abuse education curriculum for elementary school students. *Journal of Child and Adolescent Substance Abuse*, 2007, 16(4), 1-22.

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). *Polydrug use: patterns and responses*. Lisbon: EMCDDA, 2009.

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). *Problem amphetamine and methamphetamine use in Europe*. Lisbon: EMCDDA, 2010.

Gilbert P, Ciccarone D, Gansky SA, Bangsberg DR, Clanon K, McPhee SJ, Calderón SH, Bogetz A & Gerbert B. Interactive "video doctor" counselling reduces drug and sexual risk behaviours among HIV-positive patients in diverse outpatient settings. *PLoS ONE*, 2008, 3(4), e1988.

Gryczynski J, Mitchella SG, Peterson TR et al. The relationship between services delivered and substance use outcomes in New Mexico's Screening, Brief Intervention, Referral and Treatment (SBIRT) Initiative. *Drug and Alcohol Dependence*, 2011, 118:152-157.

Kahan M, Wilson L, Becker L. Effectiveness of physician-based interventions with problem drinkers: a review. *Canadian Medical Association Journal*, 1995, 152:851-859.

Kaner EF, Dickinson HO, Beyer FR, Campbell F, Schlesinger C, Heather N, Saunders JB, Burnand B, Pienaar ED. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews* 2007, Issue 2.

Kaner EF, Dickinson HO, Beyer F et al. The effectiveness of brief alcohol interventions in primary care settings: a systematic review. *Drug and Alcohol Review*, 2009, 28(3):301-323.

Kay-Lambkin FJ, Baker AL, Lewin TJ & Carr VC. Computer-based psychological treatment for comorbid depression and problematic alcohol and/or cannabis use: a randomized controlled trial of clinical efficacy. *Addiction*, 2009, 104(3), 378-388.

Krupskia A, Searsa JM, Joescha JM et al. Impact of brief interventions and brief treatment on admissions to chemical dependency treatment. *Drug and Alcohol Dependence*, 2010, 110: 126-136.

Lanier D & Ko S. Screening in Primary Care Settings for Illicit Drug Use: Assessment of Screening Instruments: A Supplemental Evidence Update for the U.S. Preventive Services Task Force. *Evidence Syntheses*, 2008, 58(2).

Lee CM, Neighbors C, Kilmer JR & Larimer ME. A brief, web-based personalized feedback selective intervention for college student marijuana use: a randomized clinical trial. *Psychology of Addictive Behaviors*, 2010, 24(2), 265-273.

Madras, BK, Compton WM, Avula D et al. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: Comparison at intake and 6 months later. *Drug and Alcohol Dependence*, 2009, 99: 280-295.

Marsch LA, Bickel WK & Badger GJ. Applying computer technology to substance abuse prevention science: results of a preliminary examination. *Journal of Child and Adolescent Substance Abuse*, 2006, 16(2):69-94.

Moyer A, Finney J, Swearingen C et al. Brief interventions for alcohol problems: a meta-analytic review of controlled investigations in treatment seeking and non-treatment seeking populations. *Addiction*, 2002, 97:279-292.

Newton NC, Teeson M, Vogl LE & Andrews G. Internet-based prevention for alcohol and cannabis use: final results of the climate schools course. *Addiction*, 2010, 105(4), 749-759.

Pérez K, Santamariña-Rubio E, Rodríguez-Martos A, Brugal M, Teresa-Ricart I, Suelves JM, de la Torre R, Pujadas M, Ariza C, Díez E, Nebot M, Ramos P, Beneyto V, Martínez-Plasència A. Substance use among non-fatally injured patients attended at emergency departments in Spain. *Drug and Alcohol Dependence*, 2009, 105(3), 194-201

Rickert VI, Graham CJ, Fisher R, Gottlieb A, Trosclair A & Jay MS. A comparison of methods for alcohol and marijuana anticipatory guidance with adolescents. *Journal of Adolescent Health*, 1993, 14(3), 225-230.

Riper H, Kramer J, Smit F et al. Web-based self-help for problem drinkers: A pragmatic randomized trial. *Addiction*, 2008, 103(2): 218-227.

SAMHSA. *Alcohol Screening and Brief Intervention (SBI) for Trauma Patients Committee on Trauma Quick Guide*, 2007.

Schinke SP, Di Noia J, Glassman JR. Computer-mediated intervention to prevent drug abuse and violence among high-risk youth. *Addictive Behaviors*, 2004, 29(1), 225-229.

Schinke S & Schwinn T. Gender-specific computer-based intervention for preventing drug abuse among girls. *The American Journal of Drug and Alcohol Abuse*, 2005, 31(4), 609-616.

Schwinn TM, Schinke SP & Di Noia J. Preventing drug abuse among adolescent girls: outcome data from an internet-based intervention. *Prevention Science*, 2010, 11(1), 24-32.

Tait R & Hulse G. Reduction in emergency presentations by adolescent poly-drug users: A case-series. *Journal of Child and Adolescent Substance Abuse*, 2005, 14(4): 41-53.

The Insight Project Research Group. SBIRT outcomes in Houston: final report on InSight, a hospital district-based program for patients at risk for alcohol or drug use problems. *Alcoholism, Clinical and Experimental Research*, 2009, 33(8): 1374-1381.

Tossman H, Jonas B, Tensil MD, Lang P & Strüber E. A controlled trial of an internet-based intervention program for cannabis users. *Cyberpsychology, Behavior and Social Networking*, 2011, 14(11): 673-679.

Vaca FE & Winn D. The basics of alcohol screening, brief intervention and referral to treatment in the emergency department. *Western Journal of Emergency Medicine*, 2007, 3(8): 88-92.

Vitale S & van de Mheen D. Illicit drug use and injuries: A review of emergency room studies. *Drug and Alcohol Dependence*, 2006, 82(1), 1-9.

Whitlock EP, Polen MR, Green CA et al. Behavioural counseling interventions in primary care to reduce risky/harmful alcohol use by adults: a summary of the evidence for the U.S. Preventive Services Task Force. *Annals of Internal Medicine*, 2004, 140:557-568.

Williams C, Griffin KW, Macaulay AP, West TL & Gronewold, E. Efficacy of a drug prevention CD-ROM intervention for adolescents. *Substance Use and Misuse*, 2005, 40(6), 869-878.

World Health Organization. *The effectiveness of a brief intervention for illicit drugs linked to the alcohol, smoking, and substance involvement screening test (ASSIST) in primary health care settings: a technical report of phase III findings of the WHO ASSIST Randomized control trial* (2008).

http://www.who.int/substance_abuse/activities/assist_technicalreport_phase3_final.pdf, accessed 15th February 2012.

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